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ABSTRACT

Intended for independent study directors, course authors, and directors of home based or distance learning projects, this collection of current, practical guides on correspondence course development contains fourteen chapters authored by practicing home study educators and experts in their field. From Theory to Practice lists steps in course production from subject selection through revision program implementation. Naming the Parts lists course components with a profile of a home study course and glossary included. Approaching Course Development offers guidance on planning. Supervising Course Authors discusses author selection and gives a sample author's contract. Writing Objectives shows how to prepare good instructional objectives. (A review quiz follows.) Working Magic with Manuscripts provides checklists for copy editing. Managing Text Readability discusses reading level formulas and provides practice examples. (The Dale list of 30,000 Familiar Words is appended.) Writing Examples uses practical examples in describing multiple choice test preparation. Audio Visual Material discusses their effective use. Course Design and Layout overviews techniques available to the course developer. Managing Course Production discusses step-by-step text production. (Proofreader's marks and glossary are appended.) Creative Course Packaging presents design principles. Completion Rate Studies defines terms, provides examples, and includes a quiz. Financial Analysis explains basic cost accounting principles (relationships among course price, volume, and profit analysis). (YLB)

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Home Study

Course Development Handbook

Edited by

Michael P. Lambert and Sally R. Welch

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The National Home Study Council, a voluntary association of accredited home study schools, was founded in 1926 to promote sound educational standards and ethical business practices within the home study field. The independent NHSC Accrediting Commission is listed by the United States Office of Education as a "nationally recognized accrediting agency." The Accrediting Commission is also a recognized member of the Council on Postsecondary Accreditation (COPA).

Contents

Editor's Note i

Introduction ii

Introducing the Authors iii

1

From Theory to Practice 1

2

Naming the Parts 15

3

Approaching Course Development 35

4

Supervising Course Authors 47

5
Writing Objectives 59

6
Working Magic with Manuscripts 87

7
Managing Text Readability 99

8
Writing Examinations 127

9
Audio Visual Material 151

10
Course Design and Layout 163

11
Managing Course Production 191

12
Creative Course Packaging 207

13
Completion Rate Studies 217

14
Financial Analysis 233

Suggested Readings 243

Editor's Note:

In writing material for this Handbook the editors and authors have chosen to use the word "he" in all references, as is fitting for writing on a descriptive level. "He" is defined by WEBSTER'S NEW COLLEGIATE DICTIONARY, eighth edition, as "used in a generic sense or when the sex of the person is unspecified." Therefore, in the following articles, "he" also indicates "she."

Introduction

One of the National Home Study Council's main goals is to conduct and promote research for the advancement of correspondence education. This Handbook is a collection of current, practical, essential guides on how to develop a correspondence course. It presents the vital skills and knowledge developers of home study courses need for success. The Handbook attempts to cover the complete range of topics on course development, from market research to the final printing.

This Handbook is a result of a project suggested by NHSC's Research and Educational Standards Committee. It is intended for use by new home study Directors of Education, course authors, or anyone interested in home study course development.

The authors are practicing home study educators and experts in their fields. The National Home Study Council is deeply indebted to them and expresses gratitude for their fine contributions to the advancement of the home study field.

We hope that you will find this Handbook useful and we welcome any suggestions and comments.

William A. Fowler
Executive Director
National Home Study Council
April 1980

Introducing the Authors

William A. Fowler is the Executive Director of the National Home Study Council. He joined the Council in 1961 as Assistant Director and was named to his current position in 1972.

"What we have tried to achieve with this Handbook, the Council's initial effort in what we hope will be a continuing series of Handbooks, is to capture and preserve the collective knowledge and experience of veteran home study educators."

Michael P. Lambert is the Assistant Director of the National Home Study Council. He joined the Council staff as Accrediting Program Coordinator in 1972 and was appointed to his present position in 1977.

"Each year the Council receives hundreds of requests for help from member and non-member corresondence institutions. This Handbook presents as much practical advice on home study course development as possible, given the constraints of paper, ink, time, and budget."

Louis E. Frenzel joined the education staff at National Radio Institute, Washington, D.C., in 1959. In 1969 he became Assistant Director of Education. He joined Heath Company in 1973 where he is currently the Vice President, Education Systems.

"I urge course writers and education directors to consider seriously greater usage of a variety of media -- particularly audio-visual media -- in their courses. Some of the old formulas for course development need to be retired."

Mary E. McKeown joined the American School, Chicago, Illinois, in 1942 as an Instructor. In 1958 she was named High School Principal, and today she serves as Vice President, Educational Services.

"As a Director of Education you need to have a good sense of humor. You will have to play many roles -- administrator, teacher, writer, motivator, supervisor, innovator, and most importantly, listener. You'll never be bored!"

Gordon C. Bennett is Chief of the Program Management Office, Directorate of Training Developments at the U.S. Army Quartermaster School (QMS) in Fort Lee, Virginia. He joined the QMS in 1959 and has over 14 years of experience in preparing correspondence courses for the U.S. Army.

"If you agree that objectives are the starting point and basis of a course, can you really say you have a course if you don't have objectives? Can you say you have a good course if you didn't make the necessary effort to develop good objectives?"

Charles B. Marshall joined La Salle Extension University, Chicago, Illinois, in 1962. He is currently the Vice President, Education, at La Salle, and he is a former member of the Accrediting Commission of the National Home Study Council.

"At a time when high quality home study courses are so widely recognized that they may even award a degree, the responsibility for providing the finest home study materials becomes more important than ever before in the history of correspondence education."

Lee Hughes is the Director of Education at the U.S. Marine Corps Institute (MCI) in Washington, D.C., which he joined in 1964. He is the Chairman of the NHSC's Research and Educational Standards Committee.

"Everyone knows that Johnny is a poor reader. There are many proved methods to determine the reading grade level of your home study courses. Try one."

John T. Loftus joined the staff of International Correspondence Schools, Scranton, Pennsylvania, in 1952. Today he is the Vice President-Operations at ICS.

"Preparing the examination is the critical act of developing a course. It is the primary vehicle to measure the effectiveness of your course."

Douglas M. Bonham is another alumnus of the National Radio Institute staff of the early 1970's. He joined Heath Company, Benton Harbor, Michigan, in 1974, where he is now Product Line Manager in their Education Systems Division.

"To be effective, a home study course must be more than just a collection of paper and pencil experiences. Kits and audio-visual aids can breathe life into your courses."

Robert B. Hamilton joined the instruction staff at the Westlawn School of Yacht Design, Stamford, Connecticut, in 1973. In 1974 he was named Academic Supervisor. In addition to his university education, he has completed home study courses in writing, engineering, art, and yacht design.

"An effective layout will contribute to student motivation, build his confidence in our texts, and encourage his sustained effort towards course completion."

Ronald D. Clark served on the staff of International Correspondence Schools from 1952 - 1973 where he was Dean of the Faculty. He is a former member of the National Home Study Council's Accrediting Commission, and he was Assistant Director of NHSC from 1973 until 1976, when he joined the staff at the North American Training Academy (NATA), Newark, Delaware, where he serves as Vice President and Director of Education.

"Get yourself knowledgeable practitioners in your study field. While they won't often be able to write, they will give you good information. Then retain excellent technical editors and copy editors. Production on an excellent scale is wonderful, but you must have something worthwhile to produce."

David H. Dasenbrock joined McGraw-Hill Continuing Education Center's National Radio Institute, Washington, D.C., in 1969. He is currently the Dean of Instruction and Editor-in-Chief at NRI.

"The initial package of study materials is the most important package a student will recieve. Give it your greatest attention."

Kenneth E. Whittington joined MTA Truck Driver School in 1970. He is Executive Vice President and Director of MTA and says proudly that 95% of what he knows about home study education he learned through his affiliation with the National Home Study Council.

"The Director of Education must realize that his job is of extreme importance. He must be an expert in the following areas: sales, law, marketing, accounting, research and development, psychology, education, and business administration. He must be of caliber to attend and contribute to a board meeting at 10: 00 a.m. and then be able to solve a student's educational problem at 10: 30 a.m. It's a challenging career."

James E. Godfrey founded the Truck Marketing Institute in 1964 and has served as its Director since that time. He is currently a school member of the NHSC's Accrediting Commission.

"Reflecting on home study schools that have come and gone over the years, failures often are traceable to errors of business judgment. In any business -- schools included -- management must know the real costs of its products and services."

one

From Theory to Practice

William A. Fowler

Introduction to Article

In this first article, the philosophy of modern home study education is discussed, the principles of course development are presented and there is an explanation of how courses meet the demands of adult, self-paced learners.

The article also lists steps in course production from the selection of the course subject through the implementation of a course revision program. A suggested list of steps to follow in the development of a course and a sample chart of accounts for budgeting for course development are also included.

From Theory to Practice

William A. Fowler

Not long ago, one of the truly outstanding correspondence educators of the 20th Century, William A. Rogers, Vice President of the International Accountants Society and member of the NHSC Hall of Fame, remarked to a group of NHSC school staff members attending a seminar: "The most dramatic change in home study education that I have witnessed in the past 30 years is the tremendous improvement of home study course materials. There is simply no comparison between home study lessons of three decades ago and the lessons in today's courses."

That is quite a compliment coming from someone who has earned national respect for his expertise on such matters. And it's true! Most home study courses today are exemplary. The texts, which bear the burden of delivering the course content (since they must serve as the teacher and the text, doing both in an interesting way), make use of just about every known innovation of media technology available.

The principles of text design, development and production are touched on briefly here, and are fully explored in the subsequent articles in this handbook. Let's begin with some theory and conclude with some thoughts on how to apply the theory to text design and development.

THEORY OF LEARNING BY CORRESPONDENCE

Educators are still at a loss to explain exactly how the learning process takes place in the chemistry of the brain. There has been woefully little conclusive research on how adults learn, and there has been

even less published research on correspondence theory.

Yes, we make attempts to describe what we do, and maybe even why we do it. But we are hard pressed by give a discreet, understandable, and accepted description of the theory behind the success of home study methodology.

Let us approach this topic by describing some of the basic beliefs or axioms commonly held by home study educators:

-- Learning takes place everywhere, and most of it outside the classroom.

-- Home study learning theory is based on the concept of independent, mature learners studying formally prepared materials in a given subject. The learners are motivated primarily by the interest they have in the subject they are studying.

-- The theory espouses the concept of "captaincy of self," wherein the individual student assumes responsibility for activating and sustaining the learning process. The teacher (or more properly tutor) plays a supportive role by guiding the learner, giving encouragement, and providing periodic feedback and, hopefully, external motivation.

Using these concepts, and knowing in advance that the vast majority of home study students are in the 28-40 year old group, we should look closely at problems facing the independent adult home study learner:

-- The student may lack confidence, confidence in the ability to learn, especially if there is little contact with other students working on the same course.

-- As a result, the student may be fearful of not doing well and feeling there will be a loss of face if all work is not perfect. This, then, may result in a delay in submitting work for the tutor's comments and guidance.

-- The student is anxious about how to combine or reconcile study and family demands and demands of friends, neighbors, the boss, his workmates, and the myriad

of other things to do. There may be a guilty feeling about spending time "shut up alone with the books."

-- Then too, the student may quite simply feel too tired after a hard day's work to settle easily to mental effort.

As they ponder course design and weigh these factors, home study course developers should recognize other traits in adult learners:

-- The adult student has more experience, more knowledge and, above all, more motivation, than most school age students. Many have lost the innocence that lets youth imagine that time stretches endlessly ahead. Most adult students know that if there is to be a more rewarding job or a more fulfilling role in life, there is little time to waste. A strong sense of purpose can more than make up for being out of practice.

-- While the adult student's memory for facts may not be as good as that of the younger student, the ability to grasp and analyze underlying principles and the relationships between facts is better. This kind of understanding is far more valuable in higher education than is mere knowledge of facts.

-- Experience in educational programs based on correspondence study suggests that adult students learning at a distance can do just as well as younger students working in a classroom.

-- Correspondence courses offer new ways to use free time creatively: kits, experiments, outside lectures on tapes, etc., all provide a multi-media approach that can effectively compete with TV watching.

Now let's look at how home study course developers can meet the challenges and successfully teach learners at a distance. Since most courses use text materials as the primary information source, we will concentrate on how correspondence learning theory is applied in the writing of good text materials.

TEXT DESIGN

Over the years home study school educators have accepted some basic principles of course and text design. Important among these are:

1. The home study text is not like the typical college text; it must do more than just provide information.

2. Home study courses must teach, explicate, anticipate questions and, in general, serve as teacher, facilitator, classroom mate, motivator, and be the source for needed information.

3. Good courses must come with built in readings, assignments, evaluative instruments and inspiration for students to continue. They must challenge the fast learners and still hold the attention of, and teach, the less gifted.

4. Home study courses must teach the essential, current body of knowledge, skills and attitudes to meet course objectives using media that are economically feasible and educationally effective.

5. Home study instructors serve primarily as evaluators of achievement and responders to technical queries. Their role as dispensers of information, "lecture givers," is minimal. Their role as motivators of learners, via written or oral commentaries, is an important function.

The system of teaching by correspondence can be broken down into the following functions:

Function	Discussion [1]
Information Delivery	Materials are based on specially written texts and written for a specific audience. Home study authors and editors have a

[1] Courtesy: Dr. Charles Marshall, La Salle Extension University

	detailed profile analysis of their prospective students.
Elaboration and Explanation	Study guides and texts are uniquely designed for the special needs of thousands of students. Analysis of areas where students need additional information assists editors in making material more relevant.
Motivation	Motivation is consistently incorporated in home study text materials. It is also expanded by personal comments on graded assignments along with helpful model answers. Motivational letters are sent regularly.
Reinforcement	The student writes a question and sends it to the school. Each question receives a personal, detailed reply. Self-quizzes in study guides provide written answers for permanent reference and review.
Evaluation	A series of written examinations, evaluated personally and supplemented with model solution replies, are used frequently enough to measure learning. The student is not allowed to progress through any substantial amount of the course without a complete understanding of the material already covered.
Learning Completion	Making use of the graded test, learning should continue until the student attains a thorough grasp of the material. Review of the returned, graded paper and understanding the model solutions are an intrinsic part of the studies.
Application of Learning	The home study student frequently applies on the job what has been learned the night before. "Learn it today, apply to tomorrow," is a major motto of correspondence educators. Because most home study programs have specific career or voca-

tional goals, learning tends to relate specifically to the job and may be applied immediately.

Finally, home study text design is predicated on these assumptions:

-- The learner chooses to study on his own.

-- The learner is capable of independent, self-directed study without the props of peer group or continuous teacher interaction.

-- The course is geared toward the general background, reading ability and interests of the broad range of enrollees.

-- The course objectives match closely the learner's objectives, as well as match the promises of the school's advertising.

-- The learner must feel able to "transcend the bondages of space and time" and learn effectively by mail. The system, therefore, must appear to be individually designed for the learner and it must be clear that personal attention is readily available.

-- The course must be able to be taught effectively by correspondence.

Considering all of these concepts, the home study educator proceeds to construct course materials which meet the specific needs of mature, independent, self-directed learners. Modern home study courses are the result of decades of development of a rather practical, results-oriented approach to education. The principles, beliefs, theories and axioms above are the distillation of years of collective thinking of home study educators.

STEPS IN COURSE PREPARATION

The steps in course preparation vary from school to school, and no one method is universally followed. However, some general guidelines are observed and these are outlined below.

A skeletal outline of the major steps in course development includes these steps in which home study developers:

1. Determine the subject matter to be presented: in depth market research can be helpful, but don't ignore the importance of intuition, imagination and enthusiasm.

2. Determine the educational objectives for the course, the expected outcomes for graduates, and list the skills, knowledge and behavior changes to be imparted.

3. Prepare specially written correspondence lessons.

4. Develop supplementary material such as how to study booklets, motivational tapes, study aids, etc. Study guides tell what the reading assignments are and how to proceed. Supplementary items should include encouragement letters, practice exercises, student projects, explanations of material not covered adequately in the texts or lessons and, possibly, experimental kits.

5. Develop examinations for each study unit. These are generally designed as open-book examinations. They should teach as well as test. Furthermore, the examinations should be designed to facilitate correction and evaluation in an economical way. Above all, examinations should measure the extent to which the objectives of the course have been mastered.

6. Design, print, package, and store the course for use.

Appendix A at the end of this chapter is a flow chart showing the steps followed in developing a typical course. Appendix B provides sample budget items to be considered in developing a course.

This Handbook includes articles which explain the "how to" of each of the major steps listed above.

COURSE WRITING TECHNIQUES

In the actual writing of course texts, schools use one of these three methods:

First, the use of in-house specialists who, depending on the size of the school, may double as instructors. This technique is especially effective for revisions. Because of time priorities and the difficulty of keeping up in the field, this technique may not be practical for major rewrites or for new course development.

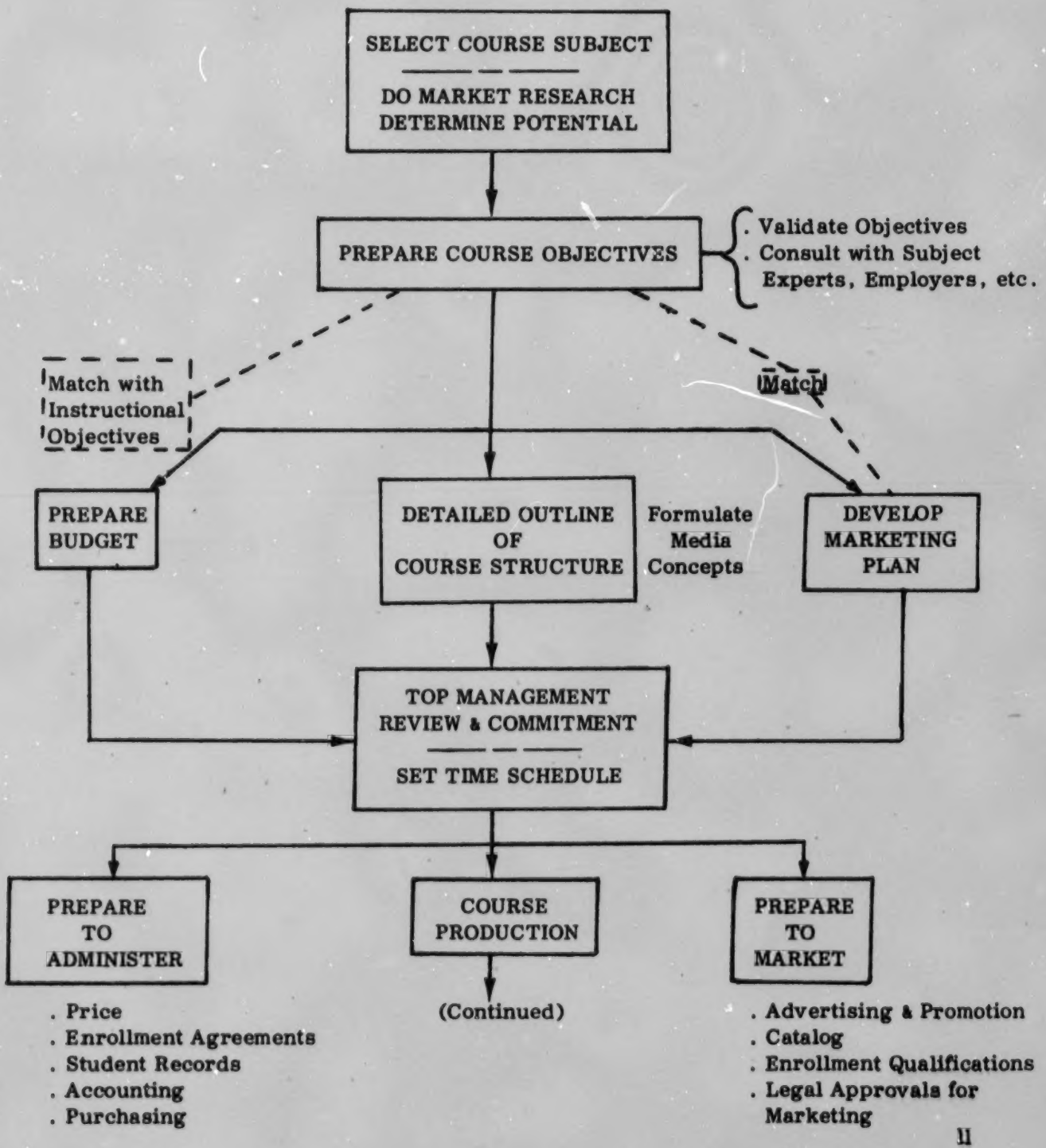
Second, and probably the most popular method, is the use of an "outside" subject matter specialist working closely with the school's educational director. When such specialists can be found, this method can be most effective. Due to the extensive coordination, review and editing required, it can also be inefficient, not to mention frustrating. The amount and method of remuneration are important factors in the arrangements made with outside writers.

The third method is the use of a publishing or consulting firm, under contract, to prepare a complete course or program. Although a popular and frequently used method, we have seen only a few good courses prepared in this way. Experience, cost, coordination, time, and availability of qualified "contractors" are factors which greatly limit the use of this method.

For the purposes of this Handbook, the authors have assumed that the readers intend to develop, or actually are developing, their own texts (options one and two above). By understanding the principles of home study text design, Directors of Education and other school executives are better able to work with and control the quality of the courses developed using any of the methods.

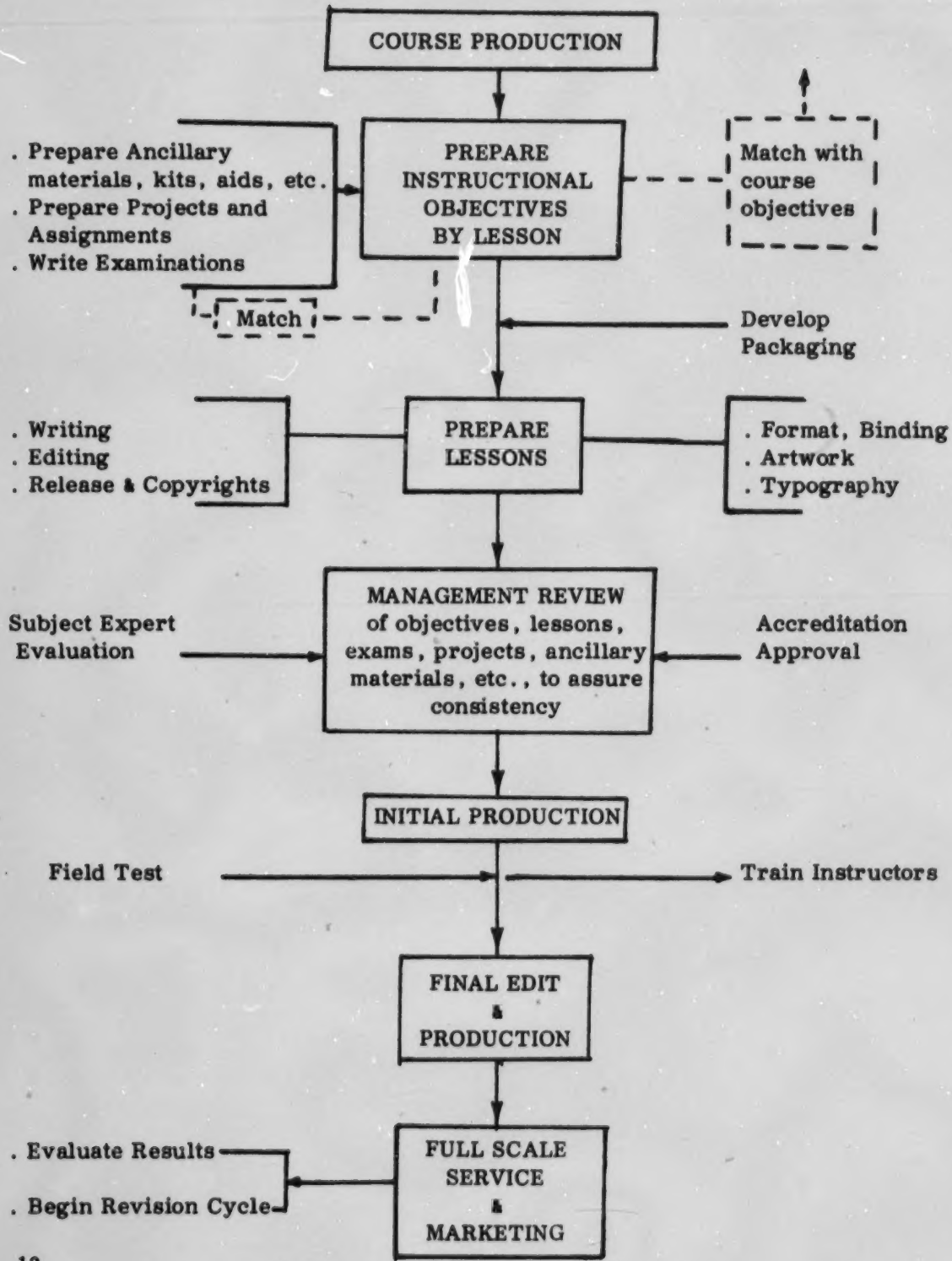
Appendix A

STEP BY STEP DEVELOPMENT OF A
TYPICAL HOME STUDY COURSE



11

DEVELOPMENT OF A
TYPICAL HOME STUDY COURSE
(Continued from preceding page)



12

APPENDIX B

SUGGESTED CHART OF ACCOUNTS FOR SAMPLE HOME STUDY COURSE BUDGET*

1. Market Research -- Testing the market; feasibility; determining scope of course.

2. Fixed Costs

   Salaries
   - Professional, Education Director
   - Clerical

   Overhead
   - General and Administrative
   - Equipment, office
   - Supplies, office
   - Other direct costs

3. Course Development Costs

   Research
   - Publications
   - Travel
   - Consultants, Advisors
   - Laboratory and design work

   Writing
   - Writers
   - Contract costs

   Editing
   Subject Review/Field Test
   Typing
   Art/Graphics/Photography

4. Ancillary Materials Costs

   Kits
   Tapes
   Equipment
   Other (Diplomas, Envelopes)

5. Reproduction Costs

Layout and Design
Printing
Packaging
Binding

6. Legal Costs

Copyright Permissions
Trademarks
Course/Catalog approvals

7. Marketing Costs

Detailed breakdown determined by marketing methods used.

* This is not intended to be a proposed budget for every course, but a general guide to important budgetary line items to be considered.

two

Naming the Parts

Michael P. Lambert

Introduction to Article

The previous article examined the basic theories which are employed in home study course design. This companion article lists and explains the various components which constitute a course . . . the naming of parts. A profile of the modern home study course and a glossary of terms are included.

Naming the Parts

Michael P. Lambert

Many home study educators use the word "product" inter-changeably with the word "course" when they are talking about their correspondence offerings.

Indeed, correspondence educators have long been product oriented: they employ many business terms in this fashion because it suits what they are about.

While there is a mystique to correspondence education which defies quantitative analysis, it is useful for those coming to the subject of home study course development for the first time to know the names of all of the parts. Appendix A is a glossary of essential terms on home study course materials and the balance of this article attempts to label the many parts of the home study experience.

THE TYPICAL COURSE?

There is certainly no one prototype or "typical" correspondence course. Courses vary from school to school.

Some schools feature "hands on" learning kits. Others use audio cassette tapes for instructor comments. Still others rely heavily on non-print media for instruction. The combinations of media are numerous. This feature, creativity of product design, helps make home study an exciting method of teaching and a challenging career field.

In a recent survey of the National Home Study Council's member schools, the following profile emerged from the data provided by the 54 institutions which responded. These 54 institutions offered over 1,500 courses to over 1.14 million students.

Here is the profile:

-- the courses have (primarily) vocational objectives

-- the typical course has 29 required lessons and takes about 12 months to complete

-- most courses are written by a combined team of in-house and outside authors

-- most lesson/examination questions are objective type (multiple choice, etc.)

-- the courses are typically bound in loose-leaf binders

-- the lessons are personally graded by a qualified instructor

-- most of the instructors work full time, on the school premises

-- lessons nearly always receive motivational comments by an instructor

-- lessons are graded and returned to students in three days or less

This profile has been confirmed by the writer's personal experience in the correspondence field. Appendixes B through E provide tables of data describing courses offered by NHSC schools.

THE MAJOR COMPONENTS OF A COURSE

Basically we can divide the home study product into three very broad categories:

-- Instructional Materials Group -- texts, lesson material, etc.

-- Ancillary Materials Group -- kits, request for help forms, etc.

-- Educational Services Group -- evaluation and instructor comments

Appendix F is a listing of the components of each of these three groups for a sample course. The balance of this article will focus on the Instructional Materials and Ancillary Materials Group, i.e., the parts of the home study product.

THE INSTRUCTIONAL MATERIALS GROUP

Within this group we have the bulk of the lesson materials. For example, 8½ x 11" lesson texts, binder, hard-bound texts, examination booklets, etc., any item which contains subject matter knowledge to be imparted to the learner. The media employed to deliver the knowledge or information varies from school to school and even from lesson to lesson, but the missions remain unchanged for each lesson or study session:

-- present the instructional objective(s)

-- present the information, knowledge or skill

-- have the student apply the knowledge or skill, or facilitate the desired behaviorial change

-- evaluate the learning achieved or behavior change

-- motivate the student to continue to the next lesson

Within the Instructional Materials Group the core element is the lesson text itself. The text may be 8½ x 11 inch sheets bound in a vinyl binder (surely the most popular format today), or it may be a 6 x 9 inch booklet, saddle stitched. Below is a description of the major formats and materials in use today:

Loose-leaf vinyl binders are the most widely used format by schools providing materials on a lesson-by-lesson basis. The advantages of ease of revision and versatility of reproduction technique are evident. At the same time, the student has a consolidated volume, or volumes, of all material at the end of his course. This loose-leaf technique has been used quite effectively in art courses, where full color, line drawings, tip-ons, actual photographs, and other illustrations can be interspersed wherever needed. Also, new materials and

techniques may be introduced immediately into the courses.

Specially written paper-bound booklets are not quite as popular today as loose leaf texts, but are still used in longer courses. Each booklet contains a single lesson/study assignment, in either 8½ x 11" or smaller sizes, side or saddle stitched The concept was developed in the 1890's by Thomas J. Foster, founder of International Correspondence Schools, and still appears in the original pocket-size form, or in interesting variations. Such materials are easy to store, package, and ship to the student. Individual lessons may be easily revised since they can be printed in limited quantities and replaced without undue budget strains. And the same lessons may be used in many different courses, providing versatility for schools offering programs in the same subject field at different levels or different courses with related components.

Full-sized hard bound textbooks, formerly quite popular, are now often replaced by combination materials, such as texts plus assignment sheets of loose-leaf courses. The primary reason for the decline in the use of such books is the difficulty posed by revision. When used in fields where the basics do not change and when supplemented by other materials, this technique can be effective -- and impressive. The student has a lifetime reference library on his bookshelf as a reminder of his investment. Supplementary reference books and outside readings can be, and are, employed with courses using text materials prepared in these ways.

Standards texts, workbooks, and study guides. Some schools use standard resident school textbooks and workbooks, supplementing these with specially prepared study guides and instructions to the student. This kind of course is used most often by schools with high school programs and college level or degree awarding courses -- primarily because recognition of such courses by state and public school officials, who are oriented to resident schools, is facilitated when standard, recognized texts are used. Study guides prepared for use with standard texts usually include reading assignments, motivational materials, supplementary subject information, self-check quizzes and assignments, and sometimes "bound-in" examinations. These ingredients make it a home study course, and are the key to its success.

The focus of the various articles in this Handbook is the Instructional Material Group, specifically, the "how to" of producing the above listed materials.

ANCILLARY MATERIALS GROUP

Supplementing the texts discussed above are a variety of media and materials. The purpose of ancillary materials are:

-- to break up the tedium of the printed pages, and adding an additional dimension to the communication process (e.g., audio);

-- to provide the learner with a chance to apply his new found skill or knowledge;

-- to aid in the two-way communication between school and student.

The single most popular audio visual aid is surely the ubiquitous cassette tape.

The major types of media include:

Kits to be assembled, with all the necessary tools and equipment, are frequently combined with text materials to enhance the effectiveness of correspondence instruction. These cover a wide gamut, as the following list indicates:

> Television and radio set kits, electronic test equipment assembly kits, and even an electronic laboratory for radio, television and electronics students; tool kits for mechanics and camera repairmen; compressor components for refrigeration servicemen; upright and hand action models for a piano tuner; two-tone circuit for an electronic organ repairman; a second-hand typewriter for a repairman; a drafting board and instruments for a drafting student; locks, key blanks, tools, and a key-making machine for a student locksmith; and precious stones for a gemologist.

Integration with the text, assignments and examinations is the key here. Effectively used, such materials are invaluable adjuncts to the course.

Recordings are used most effectively -- together with texts -- in such courses as broadcasting and language. Most recordings today are done on inexpensive cassette tapes: small, light weight, mailable. They are excellent audio supplements for just about any course.

Tape recorders. With the development of cassettes, tapes have become more practical than before for home study. Mass production has brought this item within the economic range of many schools. Tapes are used for two-way student-school communication, such as in a broadcasting course, and for instructor critiques of student work. Some college level courses utilize recordings of lectures by professors.

Projectors and color slides see some use in home study courses. The cost of producing the "software" is largely prohibitive, not to mention the costs of shipping and handling.

THE INSTRUCTIONAL SERVICES GROUP

A brief mention of a few of the components of this group should enlighten the reader:

-- Examination services, grading of papers

-- WATS line instruction, responding to student queries

-- Administrative services, job assistance, notifying employers

-- Remedial instruction, and supply additional information

-- Shipping and receiving course materials

-- Other specialized student services.

These are but a few of the tasks which comprise the total home study experience. These tasks and services commence after the student has enrolled. The nature of these components puts them outside the scope

of this Handbook. They are, however, integral parts of the design and development of any good correspondence course.

CONCLUSION

Knowing the names of all the parts will not make you an expert in course design. Looking at actual course materials -- which are readily obtainable -- is a critical step. The other articles in this Handbook illustrate many of the components discussed above and shed additional light on just what a course is or should be. But while this Handbook is a good start, there is no substitute for actually setting about the task of preparing a course. . . where necessity for action generates a great deal of practical understanding in a very short time!

APPENDIX A

Glossary of Selected Home Study Terms

ANSWER SHEET (RESPONSE FORM): A form on which a student records responses to examination or test questions. Answer sheets are submitted to the school for grading, evaluation, and comment, and then returned to the student.

ASSIGNMENT: A part of organized material to be studied and performed by the student, according to required techniques and principles; a specific task to be performed by the student and submitted to the school for evaluation and comment.

ASSIGNMENT SHEET: A written supplement telling students what material to study and in what order to study, as well as how and when to submit examinations or projects for evaluation.

COMBINATION COURSE: A course consisting of a home study portion and a residence portion. Normally, the home study portion precedes the residence portion. Residence training is offered to provide students instruction on the use of specialized equipment, learning of manual skills or the application of certain techniques under supervision (e.g., tractor trailer driving).

COMPLETION RATE (RAW COMPLETION RATE): The ratio of assignments completed to the total number of assignments contracted for in a fixed sample of matriculated students (note: not the same as graduation rate).

COURSE: A planned sequence of educational activity, leading to the acquisition of a skill or body of knowledge, usually over a predetermined period of time.

DIRECTOR OF EDUCATION: The person in a home study school organization responsible for planning and organizing courses; selecting, preparing and editing instructional texts and study guides; supervising instructional services and staff; conducting educational research; and performing other educational tasks as may be assigned.

EDUCATIONAL RECORDS: Records and files maintained by a school for each student's educational activity, which include a student's name,

address, basic education, date of enrollment, course, grades, current academic achievement, enrollment agreements and other data.

ENCOURAGEMENT PROGRAM (MOTIVATIONAL PROGRAM): Materials and procedures used by home study schools to motivate students to start a course of study, continue in the course, and graduate.

EXAMINATION (TEST, ACHIEVEMENT TEST): That part of an assignment submitted for examination service, and designed to facilitate learning and to measure achievement. Examinations may include essay, true-false, completion and multiple-choice items, case studies, problems, or may consist of a finished product (artwork, project, article, etc.) which the student submits to the school.

EXAMINATION SERVICE: The correction and evaluation of an examination, together with any necessary motivation and counseling, by an instructor.

GRADUATE: A person who has satisfied the prescribed requirements (e.g., assignments or examinations of an educational course or program) and has been awarded a certificate or diploma affirming this.

GRADUATION RATE: Percentage of matriculated students in a fixed sample of a school's course who have satisfactorily completed all of the prescribed requirements of a given course or program.

HOME STUDY COURSE (PROGRAM, TRAINING): An organized series of instructional units designed to accomplish definite objectives by the home study method.

HOME STUDY EDUCATION (CORRESPONDENCE EDUCATION, DISTANCE EDUCATION): Education designed for students who live at a distance from the teaching institution. Ordinarily, printed and/or recorded materials are sent by mail, providing the student with structured units of information, assigned exercises for practice and examinations to measure achievement, which in turn are submitted to the teaching institution for evaluation and comment and subsequent return to the student.

INSTRUCTIONAL MATERIALS: Texts, tapes, work kits, equipment, supplies, tools, and other materials used in a course to facilitate the education and training offered.

INSTRUCTIONAL SERVICE (LESSON SERVICE, ASSIGNMENT SERVICE): The advice, counsel, guidance and instruction requested by a student with an instruction-related problem and rendered by an instructor.

INSTRUCTIONAL UNIT: A section of a home study course usually consisting of an encouraging or motivating device, lesson materials and assignment, assignment or instructional service, examination and examination service.

INSTRUCTOR (TUTOR, TEACHER, FACULTY): An individual who, qualified by education, training and experience, performs assignment, examination and personal service. He may assist in course research, writing and related activities.

KIT: A collection of predominately non-textual materials included in a home study course to augment or enhance instruction. These materials may consist of tools, equipment, instruments, audio-visual aids, components, accessories, and so forth.

NON-START RATE: Percentage of enrolled and registered students in a fixed sample of a school's course or courses who did not submit any required examination or lesson assignment for grading or servicing. Non-starts: students who are disenrolled in a course after registration, after the applicable cooling-off period but prior to submission of their first required assignment.

OBJECTIVE, EDUCATIONAL: A statement of what an educational program can do for reasonably diligent students. For home study courses, objectives are goals or aims attainable through the correspondence study method, and provide a description of skills to be acquired, information to be learned, training to be received, and attitudes and habits to be changed or developed.

REVISION FILE: A file containing suggested course revisions to update instructional material, correct errors, improve quality of instruction,

clarify passages that may confuse students, and so forth.

STUDY GUIDE (TRAINING GUIDE; INSTRUCTIONAL GUIDE): A written supplement to course materials designed to facilitate study. It may include directions on how-to-study, suggested readings, research topics, self-check tests, problems and study projects, all of which are keyed to the basic course texts.

Appendix B Average Lesson Submissions, Months to Complete and Required Resident Training

Enrollment Size (Total Active Students)	Number of Institutions	Average Number of Required Lesson Submissions (per school)		Average Months to Complete Course (per school)		Required Resident Training (per school)
		Median	Range	Median	Range	
Less than 200	9	40	21-100	5.5	1.5-24	2
201-500	7	20	4-138	8	2.2-24	1
501-1,000	4	I.D.*	I.D.	15.5	11.5-72	0
1,001-2,500	9	14	4-40	12.5	3-38	1
2,501-4,000	8	16	5-30	9	2.5-20	2
4,001-7,500	3	40	36-61	10	4-12	0
7,501-25,000	5	38	33-98	14	6-30	0
25,001 or more	6	33	15-64	20	14-24	0
Military	3	I.D.	I.D.	I.D.	I.D.	0
Averages		28.7 submissions		11.8 Months		

*Insufficient Data Reported

Appendix C Course Development Used by Home Study Schools, by Enrollment Size, 1978

Typical course developed by

Enrollment Size (total active students)	Number of Institutions	In-House Staff	Outside Authors	Combination of in-house and outside Authors	Published texts with study guide	Use another school/agency course	Other
Less than 200	9	3	0	4	1	1	0
201-500	7	3	0	4	1	0	0
501-1,000	4	3	1	2	3	0	0
1,001-2,500	9	1	0	7	3	1	1
2,501-4,000	8	2	0	7	4	0	0
4,001-7,500	3	1	0	1	2	0	0
7,501-25,000	5	4	0	1	2	1	0
25,001 or more	6	0	0	5	3	2	2
Military	3	1	0	2	0	0	0
TOTALS	54	18	1	33	19	5	3

Appendix D Course Examination Procedures Used by Home Study Schools, by Enrollment Size, 1978

Typical examinations are . . .

Enrollment Size (total active students)	Objective	Expository	Project	Other
Less than 200	7	3	0	2
201-500	6	2	2	0
501-1,000	4	4	3	1
1,001-2,500	8	5	2	3
2,501-4,000	8	7	4	0
4,001-7,500	2	2	1	1
7,501-25,000	5	1	2	0
25,001 or more	6	5	5	1
Military	3	0	0	1
TOTALS	49	29	19	9

Types of examinations include objective (Multiple choice, true-false, etc.), Expository (Essay answer) Project (artwork, completed kits, etc.) and Other (not specified).

Appendix E Method Used to Bind Course Texts in Home Study Schools by Enrollment Size, 1978

Enrollment Size (total active students	Number of Institutions	Loose Leaf Binders	Loose Sheets in Folders	Papercover books (perfect bound)	Papercover books (side or saddle-stiched)	Hardcover books	Other
Less than 200	9	4	0	3	2	1	1
201-500	7	6	1	2	1	1	2
501-1,000	4	3	0	1	2	0	0
1,001-2,500	9	4	0	1	1	3	3
2,501-4,000	8	2	2	1	3	1	2
4,001-7,500	3	1	1	0	1	1	0
7,501-25,000	5	3	0	0	2	0	0
25,001 or more	6	3	1	2	2	1	1
Military	3	0	0	0	2	0	1
TOTALS	54	26	5	10	16	8	9

APPENDIX F

COMPONENTS OF A MYTHICAL HOME STUDY COURSE IN "GOURMET COOKING"

A. Instructional Materials Group

1. 10 lessons, averaging 12 pages each
2. 10 written examinations, averaging 20 questions each
3. 20 self-check quizzes, 5 questions each
4. 10 at home projects
5. 5 mailed in projects
6. Signatures from 3 individuals, unrelated to student, attesting that a gourmet meal (of student's choice) had been served. Menu and dinner guest's comments must accompany signatures.

B. Educational Services Group

1. 10 request for help/technical inquiry forms (pre-printed)
2. 20 pre-addressed envelopes
3. Final examination package
4. WATS line telephone card
5. Starter lesson kit: pen, menu card, envelope, etc.

C. Ancillary Materials Group

1. Premium to enroll: Cookbook
2. Stimulus to return lesson one: Apron with School logo

Appendix F cont'd.

3. Stimulus to return lesson five: engraved menu cards

4. Stimulus to return final exams: handsome diploma

5. 6 audio-cassettes with lectures

6. Silver-plated wine tasting cup on chain.

APPENDIX G

SAMPLE REQUEST FOR HELP FORM

TMI

TRUCK MARKETING INSTITUTE
1056 Eugenia Place (P. O. Box 188)
Carpinteria, California 93013, U.S.A.

If you should hit a snag, don't give up... Write for help!

INFORMATION REQUEST Date

Student Number .....

Name .....

Firm .....

Address .....

.....

(Print student numbers, name and address exactly as on TMI address plate.)

– Fold – Regarding: Lesson Nbr. ..... Pages.....

INSTRUCTOR'S REPLY Date

Detach and Keep Yellow Copy. / Send White and Pink Copies with carbon intact. / Instructor will reply on White Copy.

Courtesy Truck Marketing Institute

three

Approaching Course Development

Louis E. Frenzel

Introduction to Article

Giving students a good initial impression via quality course material is critical to reducing non-starts and enhancing course completion rates. Mr. Frenzel, a proponent of the high quality, low cost, short home study course, offers invaluable guidance on how to go about planning for a modern home study course.

He argues persuasively that home study courses, like modern fiction thrillers, should have a "can't put it down" quality.

Approaching Course Development

Louis E. Frenzel

Whenever educational directors get together to discuss the development of home study courses, inevitably the talk turns to completion rates and non-starts. This usually leads to a discussion of the first lesson in the course. The first lesson is always critical since it is the first material that the student sees. It typically introduces the course and sets the tone for future study. This lesson is also crucial because the school wants the student to get started. For that reason, the first lesson is quite special. Typically, it is shorter, simpler, and more interesting in order to entice the student into studying it and submitting his first exam.

While there is a lot to be said for attempting to get the student's first lesson as soon as possible, it creates the wrong attitude in developing the entire course. Why focus the attention on just the first lesson or first few lessons and neglect the others? Aren't all the lessons in the course just as important? If such techniques work so well for the first lesson, then why can't they be applied across the board to all other lessons? I personally object to the concept of developing just a good first lesson. The overall goal should be to develop a totally good course. With such an approach, you should not only obtain the student's first lesson quickly, but you should also help to motivate the student to study all the remaining lessons. Thus the result should be a reduction in the non-start rate and a significant increase in graduation rate.

The purpose of this article is to show how the techniques of creating a highly interesting and motivational first lesson can be applied to the entire course. A secondary purpose is to point out that there are

many alternatives in developing the first lesson. Educational directors have many options to choose from today in preparing new courses or when updating existing courses. Specifically, you should not limit your thinking to standard written home study textbooks, you should consider all of the many useful and effective educational techniques available today.

The standard written home study lesson will always be a viable way of teaching. But there are many good reasons for considering all of the other alternatives available. I would like to discuss some new approaches to developing not only a good first lesson, but a good complete course.

REVIEW OF BASIC CONCEPTS

Somehow it doesn't seem necessary to review most fundamentals of developing self instructional material for adults. Yet, when new courses or lessons are created, these basic concepts often get lost. It doesn't hurt to bring them up again and again so that we remember how extremely important they are. The most important concepts are outlined below:

1. Involvement -- The best way to get a student to start and complete a home study course is to get him involved. Involvement means a lot more than having him read 500 pages of text material. So many home study courses say to the student, although indirectly, "if you read these 20 textbooks you will be a good TV repair man, etc." While I have to admit that reading is involvement, it is not the type of involvement that students necessarily want or need. So many home study students take courses to learn new skills and techniques. Most courses are technical and skill oriented. This means the student wants to learn how to repair electronic equipment, take photographs, work with locks, or navigate a small boat. All of these are typically equipment related skills. This is what the student wants to do, work with the equipment, not read about it. While it is not always possible to create the type of involvement required to teach the skills students want, other types of involvement can often

be substituted. Such involvement can be associated with the techniques and media of teaching.

2. Motivation -- A student will never begin to complete a home study course unless he is motivated. Typically home study students are already motivated simply because they had enough interest and initiative to enroll in the first place. Adult students are motivated by a genuine need or desire to learn. With this built in motivation to work, getting a student to start and continue a course should not be a problem. Yet it is. In my own experience, it is the materials and procedures of the school that demotivate the student. You should take a hard look at your own materials and procedures to see that they are not demotivational. Are they too complex? Are they patronizing? Are the materials pertinent and of the highest quality?

3. Subject Matter -- Most students enroll for a home study course because they are interested in some particular subject. Your course happens to cover that subject. If the student is going to start and complete the course, then you must give him what he wants or needs. This means going all the way back to the beginning and doing your homework in terms of market research. Just what does the student of today want and need? What does he expect in terms of content and delivery? Is your present course material and delivery in keeping with what the student requires and is looking for? If the course material is not entirely pertinent or is out of date, the student will immediately be frustrated. Most students come to a home study course knowing at least something about the subject in question. Students can quickly detect unpertinent or out of date material. The material should also be of practical value. There is nothing more boring than attempting to read a textbook of theoretical ideas. Practical material is much more interesting and useful. Most home study students want practical end results and things they can apply immediately on the job. Otherwise you will lose them quickly. One of the best ways to achieve this theory-

to-practice transition is to create learning materials that challenge the student to apply what he has learned.

4. Quality -- If you send your student a stack of mimeographed pages stapled together for his first lesson, he is certain to be demotivated. Learning materials must be of the highest quality to attract and hold the student. Most individuals are used to high quality and high impact media. Even the lowest priced of magazines feature slick paper and glossy multi-color illustrations. School textbooks that most student remember are of colorful, high graphic design. If the student gets cheap, low grade materials, don't expect him to start, or to finish.

5. Length -- Keep it short. There is nothing more demotivational to a student than realizing that he has to read 150 lesson books and build 57 kits. Is all this really necessary? Can't the course be made shorter? Anything that you do to reduce the student's study time while not compromising learning effectiveness will help to get him started faster and finished sooner. Most people want to have the knowledge "right now." No one wants to spend 3 or 4 years of study. And in most cases, it isn't necessary. By eliminating unnecessary lessons and keeping the remaining lessons short and to the point, you not only will get more students to finish sooner, but also you will reduce your costs and perhaps course prices. There is a lot to be said for brevity.

TECHNIQUES FOR CREATING MODERN COURSES

How do you create a high impact motivational and involvement oriented home study course? Just how does a school create a program that the student can literally not wait to start, cannot put down and hates to see come to the end? Isn't that exactly the goal we are trying to achieve? Here are some techniques for putting life into home study courses:

1. Objectives -- The concept of writing course objectives and then creating the lessons, kits and other materials to achieve these objectives is not new. Most big courses

simply attempt to cover as much material as possible and hope to include all student needs. Sometimes the result is that the student knows the subject well but still cannot accomplish the original intent of the programs. For example, I have seen letters from students and graduates of one popular, well-known TV servicing course that state in effect, "I have completed your course and made an A+ on all lessons and kits, but I still do not know how to fix TV sets." Is this happening to your students? It is worth finding out. And, if it is, then you can put the blame on lack of clear-cut objectives. In the development of a TV course the objective should be stated something like this: "When the student completes this course he will be able to troubleshoot, service, repair and maintain modern TV receivers." Then the learning materials can be developed to achieve this objective. Only the subject matter and skill needed to attain the objective need be included. The result is a very effective and efficient course.

The "objectives" approach should also be extended to the lesson and kit level. And, all objectives -- course, lesson, kit -- should be clearly presented to the student in the course. He wants to know what he is going to learn or what he will be able to do. In fact, these objectives should even be stated in ads and catalogs. You will be surprised at the difference between this approach and the old brute force outline approach.

2. Written Lessons -- The written lesson is still one of the most effective and inexpensive ways of teaching by home study. Many schools prefer it, and of course it is still a viable approach. A large percentage of course materials in any home study course will be printed, but there are so many other alternatives. In addition, a lot can be done to make the printed material more interesting and effective. Here are a few techniques that should be considered:

    a. Graphics -- Regardless of the subject, you should attempt to use as many photos, drawings, graphs and other visual infor-

mation as possible. Color is also important. As trite as it sounds, a picture is still worth a thousand words. It can cut down on the number of written words used to convey information. As a general rule, you should have just as many pages of drawings, illustrations and photos as you do written material. A 50-50 split gives a near ideal teaching combination.

b. Packaging -- Packaging refers to how the printed material is put together. It can be stapled sheets of paper, bound textbooks or looseleaf binders. When a person thinks of a course he typically thinks in terms of looseleaf binders instead of textbooks or stapled sheets. If he pays hundreds or even thousands of dollars for a course, he expects quality. If for that money he receives simply a box of books, he is immediately demotivated. Although it costs a little more to package courses to look like courses, the end result is worth it. Do not hesitate to spend what is necessary to package courses in attractive multi-color binders with tab dividers, pockets and other colorful and attractive accessories.

c. Written Techniques -- So much has already been written about how to write that it doesn't seem necessary to repeat it here. You should always look at reading level, simplicity, style and brevity. However, there are two other important points that should be considered. First, any course writer should at all times keep one thing uppermost in his mind. He is writing instructional material for students who are on their own. There is no immediate instructor contact, and he is expected to learn the subject only from the written lesson. Make every attempt to

write the lessons for self instruction. Again, it's something that we all know, but that idea must be transferred to the author. Second, there is no reason why we cannot use the techniques of fiction writing to help make the written material more interesting. Most of us have read novels that get us hooked quickly, keep us reading at a fast pace, and virtually keep us on the edge of our seats. We have all read a book that we simply cannot put down. Why can't these same qualities be included in a home study course lesson? Part of the answer lies in the fact that the material being covered is often too technical and not as interesting. However, the techniques can still be applied to help in this regard. Just recently, in reading a novel by fiction writer Robert Ludlum, it occured to me that the techniques used in his books give them the "can't-put-it-down" quality which could be applied to many home study lessons. Ludlum has a particular knack of ending a chapter right at a crucial point that leaves you with many questions in your mind and an unsatisfied feeling. This makes you immediately jump to the next chapter to "see what happens." If this quality can be built into home study materials, think of how easy it would be to get a student to complete a course.

d. Currency -- Any new written home study material must be up to date. It must discuss the latest components, techniques and equipment. Photos and drawings should not be dated. Most people can quickly identify out of date material. This means you should make every attempt to keep your subject matter as recent as possible. This is especially true of the first few lessons if nothing

else.

e. Programmed Instruction -- Programmed instruction is currently out of fashion in home study. It does not appear that anyone has really used it successfully. Despite this, it is still an extremely effective and interesting way to teach a subject. The format breaks the material to be learned into small segments. In addition, it is also graphically interesting. This type of material forces involvement and because of its sequential nature causes an individual to go through a large block of material very quickly. It is hard to stop in the middle of a P.I. sequence. Programmed instruction is widely used in industry and the military. And there is a new surge of interest in it since computer technology is now such that computer aided instruction (CAI) can be implemented at a very low cost. Even though you may have tried programmed instruction before and given it up as a lost cause, it's time to reconsider it as an effective home study learning tool.

3. Alternative Media -- Why does the first lesson in the home study course have to be a written lesson? The answer of course is that it doesn't have to be. There are many other ways to "dispense" education. The written word is only one. I am referring here to the fact that there are many audio/visual techniques for teaching. For example, why can't your first lesson be an audio cassette tape? The audio cassette could be further enhanced with printed visuals or filmstrips. Low cost filmstrip viewers and projectors are readily available and would not significantly increase the cost of a course. In most cases, a filmstrip is less expensive than equivalent printed material.

Young adults today who are the prime candidates to become home study school students have been brought

up on alternative media. As children they were exposed to many hours of TV viewing. In school they learned by films, audio/visual techniques, laboratory work, field trips, language labs and lectures. While all students do some reading, they certainly do not do as much today as they once did. Many youngsters leave high school and even college with the inability to read and understand properly. These students bring these traits to a home study course. They expect to be taught by media other than reading. They don't know how to read effectively. Even more importantly, *they don't want to read!* For that reason, the modern home study course is much more effective if it uses the type of media that students are familiar and comfortable with. In many cases, the use of audio/visual techniques makes learning easy and painless. At the same time it is also quite an effective alternative to reading. In fact, all home study courses should use some type of audio/visual materials. It is no more expensive and no more difficult to develop than printed materials. You can make the comparison yourself. Even if it were more difficult and more expensive the effort would be worth it. The modern home study student does not want to read; he wants to listen, see and do. Naturally, any A/V course should be supplemented with a printed workbook of practice problems, review questions, self-test quizzes and projects to review and reinforce the A/V material. This is not only an effective teaching approach but also a major marketing tool and benefit.

4. Kits and Equipment -- Since most home study courses relate to technical subjects and skills, it is highly desirable to include as much equipment as possible with a course. Students want to get personally involved with the hardware. Electronics, for example, is truly a hardware-oriented subject. Engineers and technicians work with hardware; they either design it, install it, repair it or operate it. They do not just simply read about it. The only way to learn electronics effectively is to get your hands on the actual components and equipment used. This is true for virtually any technical subject. It is absolutely essential that

home study students receive this type of training. It is extremely motivational and it gives the student the type of practical experience that they need to translate theoretical information into some practical end result. Let them apply with the hardware what they learn in the A/V or printed lesson materials. Another important point is that the equipment should be given as early in the course as possible. Most schools still take the approach that any large expensive piece of equipment should be given at the very end of the program. The theory is that this equipment will motivate the student to finish the course. Strangely enough, this is not so. Most people today want instant gratification. If they sign up for a long course and invest a lot of money, they want what they paid for as soon as possible. If you want the student to submit his first lesson and get involved with the course quickly, give him equipment "up front." There are payment techniques that will allow you to do this and receive the benefits of the motivation that the equipment creates, but at the same time minimizing the risk of problems of student cancellations and refunds. Giving the equipment "up front" typically offsets these problems.

5. Multi-Media -- Why not use all or most of the techniques in one course? They reinforce one another and keep the student hopping from one thing to another. Most people's attention span is short. Don't overrun it. To do so is a "turn-off." By using a variety of media, properly sequenced, you create a sense of movement, accomplishment, and success rather than drudgery and boredom.

CONCLUSION

New, exciting media and techniques will attract more students, bring increased credibility to the field, and cause more students to start and finish.

Many of the articles in this Handbook will tell you how you can apply the principles of text design and development we have discussed here.

four

Supervising Course Authors

Mary McKeown

Introduction to Article

Mary McKeown speaks from nearly four decades of home study experience working with course authors. In this article she explains the talents one looks for in an author, establishing ground rules, and how to supervise authors. A sample author's contract is displayed.

Selecting course authors is one of the most important decisions an Educational Director makes.

Supervising Course Authors

Mary McKeown

The selection of an author or authors for a home study course is one of the most important decisions that an educational director makes. It it not an easy task. It is a task that requires great care. Well written courses can make the difference between success and failure for a school.

WHAT DO YOU LOOK FOR?

What characteristics and abilities do you look for in selecting a writer? First, you should look for someone with expertise in the subject matter, a person with an up-to-date knowledge of the field. Secondly, you want someone who can write in the "home study manner," who can transmit knowledge to students. You want someone who writes for his readers rather than for his peers. Thirdly, you should seek the writer who has a broad understanding of the field of home study and the special needs of home study students. Fourth, you look for one who can organize written material in such a way as to lead students step-by-step through the course. Finally, you should select writers who have the ability to complete the manuscript on time!

How do you select a writer who has all the qualities outlined above? Home study schools that have a large staff of department heads and instructors have a ready pool of talent. The educational directors of such schools are particularly fortunate in that they are aware of the potential writer's educational background, writing skills and organizational ability. A writer selected from the staff can be expected to know the format

the school uses, is aware of the capabilities of the students, and is already familiar with the principles of teaching by correspondence.

However, even in a large school there are times when it may be advisable to go outside the organization to get a suitable author. No one on the current staff may be qualified, or the persons who are qualified may be busy on other projects. Therefore, to meet time constraints the educational director will have to go outside the organization. The decision as to "inside or outside" authorship depends upon the circumstances (time, budget, staff competence, etc.).

WHERE DO YOU FIND THEM?

Where do you get good writers? You have many sources. If the course you are planning is an academic one, for example, United States History for a high school program, you can contact the history department of colleges, universities or high schools in your area for possible authors. (It is usually easier, less costly, and less time consuming to engage people who are close by -- especially if you are working with more than one author). However, since the educational director is experienced in home study methodology, he should not be afraid to work with an aspiring author in any part of the country if that author proves to have the qualifications desired. If an author's particularly outstanding (and the fee reasonable), it is worth the extra effort to work with authors located at some distance from the school.

If the course is vocational, you can contact the appropriate departments of vocational schools at secondary and postsecondary levels. Industry, too, is a good source for writers. Those currently employed in industry have practical experience and know the latest developments in their fields. You can advertise in trade and technical journals. Keep your eyes open. If you come across an article in a technical journal that is written in a style that will be understood by the type of student you expect to enroll in your program, contact the author. Perhaps you can hire him to write a course for you.

MULTIPLE AUTHORSHIP

For some courses it may advantageous to have more than one author. This might be true in a course such as World History. Having several writers each of whom is a specialist in the history of a particular area

would add to the scholarship value of the course.

The same would prove true of a course in law or taxes. Having more than one author can also speed up the writing. Some people work better in teams and are spurred on by discussing the project with others. On the other hand, there can be disadvantages, in that writing styles, and lesson tone may differ widely. This can be overcome by making one of the authors responsible for reconciling the variance in styles or by having an experienced editor go over the material. There is a saying in home study that every course needs to be read and edited by a "central mind" to assure uniform tone, style and flow of material. Some writing teams divide the work so that one writes the lesson material and the other writes the self-check and examination questions. The division of labor should be the one that will produce the best course.

ESTABLISHING A WORKING RELATIONSHIP

Once you have selected an author you will need to have an orientation session. The author needs to know about the students who will be taking the course. Who are they? High School dropouts? High school graduates? College graduates? Men? Women? Both? What age group? Income? What are their reasons for taking the course? The more the author understands the profile of the intended student audience, the better able he will be to write a course that will suit that audience.

Discuss course content. Set up a list of behavioral objectives for the course. Be sure to let the author know what the extent of the course is to be. For example, first year Algebra would be beginning Algebra through the solution of quadratic equations. A course in repair of small electric motors would be limited to small electric motors. It would not include gasoline motors. You do not want to have the course duplicate material in other courses you already have. Gordon Bennett's article in this Handbook is the best resource you have on writing good objectives.

Every home study school should have a manual for course writers. Several major National Home Study Council member schools have for years made their course author's manuals available to others. Find out which schools have a manual and ask for it.

The manual should give the writer an idea of what is expected. It should outline the format to be used, the length of learning units, types of questions to be used in examinations, etc. It should stress the differ-

ences between classrooms and home study teaching. For example, it should stress the fact that the only educational materials the home study student can be expected to have are those sent with the course. Home study courses must be self-contained. The writer has to anticipate the learning problems the student may encounter and design the course to overcome these problems. There will be no teacher there to explain convoluted "purple passages" in the course or to reassure the discouraged student or to supply material that has been omitted.

Once you have decided upon an author, you need to set the ground-rules. Make sure that each of you knows who is responsible for what. Have a contract for any authorship, whether it is done by a salaried employee or on the outside. It should specify who is responsible for supplying pictures, charts, and other illustrations; how and when manuscript is to be submitted; how and when the author is to be paid; and under what conditions the contact can be cancelled; and, most importantly, the timetable of when materials are due. (See Appendix A.)

The amount and basis for payment will, of course, depend upon the school. It may differ for various courses within a school depending upon the difficulty of getting qualified authors. One educational director recently said that his school paid by the finished page. A public institution paid $5,800 per lesson for a college course it developed. Others pay lump sums of anywhere from $1,500 to $10,000+ per manuscript. In short, the budget of the school, the difficulty of the course, and the credentials of the author influence the remuneration.

SUPERVISING AUTHORS

Now that you have the author primed to write, you need to keep his enthusiasm peaked. Drop him a note or give him a call from time to time. Set up a "tickler file" to remind yourself of when to call the author. Keep in touch with him. Maybe you will find a clipping from a newspaper or magazine which relates to his project. Send it to him.

As soon as you get the first portion of the manuscript, read it and contact the author. Feedback is as important to the author at this point as it is to the student who has submitted his first examination. You want to keep him enthusiastic about the project. Get your evaluation to him quickly. Emphasize the strengths of his presentation. Then make suggestions for improving sections you feel are weak. Be gentle but firm. Some authors are thin skinned and consider their writing an ex-

tension of themselves. Criticize their writing and you criticize them. Be as tactful as you can. However, keep in mind that you have to have a product that meets the needs of the students and your school.

As you look over the first lesson ask yourself these questions:

1. Is it written at a level the student can understand?

2. Is it condescending? Or, on the other hand, is it stilted and heavy with jargon?

3. Is its development logical? Does it proceed from the simple to complex?

4. Does it hold your interest? If it doesn't hold yours, it won't hold the students'.

5. Does it give the student practical examples that he can understand, rather than just theory?

If the reading level is too high, do not just tell the writer that the reading level is too high. Have your editors rewrite a sentence or paragraph here and there at the level you think appropriate. In technical subjects it may be necessary to tell the author to define any technical terms he uses. If the author tends to be condescending, point it out to him (in a non-condescending way, of course). If, however, the author tends to be intellectually overbearing, point that out to him too (in a non-overbearing way, of course).

The author who has not had experience in correspondence education may not realize the need for logical, sequential steps in his presentation. Show him where such omissions occur. Indicate where practical examples can be given if he has overlooked them. Suggest ways he can spark students' interest by his language and by relating his presentation to the real world.

CONCLUSION

Educational directors do not have an easy job. They are often caught between other school executives who expect a course to be ready for marketing as soon as the idea for it is conceived, and procrastinating authors who often have full-time jobs and think of their course writing

as secondary. You will have to follow up with the author to be sure he is meeting the time schedule you have set.

It is important to keep in close touch with the writer, meeting with him from time to time or speaking with him on the phone if he is out-of-town. Authors will differ in their work habits. What motivates one author may irritate another author. Most will stick close to the original schedule. Others will start out with enthusiasm and then reach a plateau. A note or a telephone call will usually get these folks back on the track. However, there are always the procrastinators. They usually say that they work better under pressure. Keep after them. Most of us do not like to nag, but unfortunately nagging is often the only pressure to which certain people respond. In short, the secret of success in re-motivating delinquent authors is to practice the art of making them feel guilty.

Thus, at times you will have to be a teacher, advisor, psychologist and even an ogre, but your goal -- an excellent home study course -- is well worth the effort you will need to expend.

APPENDIX A

STUDY GUIDE CONTRACT

Agreement made this_____day of_____, 19___, between_____of_____, hereinafter called the Author, and the American School of Correspondence of Chicago, Illinois.

In consideration of their mutual covenants the parties agree:

The Author:

1. Warrants that he is the Author and sole owner of an original unpublished literary composition, better described and more commonly known as a Study Guide, at present entitled_____ and of all rights appertaining thereto, and that said composition contains no matter infringing upon any copyright or right of literary property, and with respect to all the foregoing warranties he will hold the publisher harmless.

2. Hereby assigns and transfers said composition and any revisions thereof and all said rights to the publisher and its assigns, together with the exclusive publication, sale and other rights thereof throughout the World forever, regardless of whether the Publisher has the said composition copyrighted.

The Publisher agrees:

3. to pay the Author the fixed flat and final sum of $_____upon acceptance of Author's copy material for the Study Guide.

4. To give the Author_____copies of the printed Study Guide, free of charge.

IN WITNESS WHEREOF, the parties have executed this instrument, in duplicate, and affixed their respective seals, at Chicago, Illinois, this_____day of_____, 19___.

American School of Correspondence
Publisher

By:_____
President

and_____
Secretary

Corporate Seal

_____(SEAL)
Author

57

LA SALLE EXTENSION UNIVERSITY

A CORRESPONDENCE INSTITUTION
417 SOUTH DEARBORN STREET, CHICAGO, ILLINOIS 60605

APPENDIX A

October 30, 1979

Dear

Please accept this letter as an agreement between you and LaSalle Extension University for the preparation of a Study Guide with six study sessions to accompany the textbook selected in the Medical Office Procedures course in LaSalle's Medical/Dental Office Receptionist Program:

1. Your services as author of the Study Guide and any other services performed by you in connection with the course, will be preformed by you as an "employee for hire" of LaSalle Extension University. Accordingly, it is agreed that all contributions made by you, developed by you and submitted to and accepted by LaSalle, shall be the sole and exclusive property of LaSalle Extension University, which shall own all copyrights whatsoever, including copyright in and to all such study session supplementary materials.

2. The number of Study Sessions to be supplied by you to LaSalle is six (6).

3. Information and guidance concerning the Study Session design, organization, and content shall be supplied to you by curriculum staff members Marlene Chamberlain and Janice Trimble. Ms. Chamberlain shall be your primary liaison with LaSalle on this project.

4. The author guidelines submitted herewith form a part of this agreement by reference. Modifications in the guidelines must be satisfactory to LaSalle and agreed to in writing.

5. It is understood and agreed that all Study Session materials submitted by you to LaSalle will be subjected to review and editorial revision by LaSalle, and that any errors or departures from the specifications provided by LaSalle at the beginning of the project will be pointed out by LaSalle to you for revisions.

6. Your total fee for the writing of the Study Sessions will be payable to you as follows upon completion and acceptance of the Study Sessions according to the schedule below:

Advance payment upon signing of contract	$250.00
Payment upon acceptance of Study Session 1 to be delivered by November 17, 1978	525.00
Payment upon acceptance of Study Sessions 2-3 to be delivered by December 1, 1978	1050.00

Payment of acceptance of Study Sessions 4-6 to be delivered by January 2, 1979	$1575.00
Penalty for failure to deliver acceptable manuscript on the scheduled dates shall result in a penalty of $100 per Study Session	(600.00)
Total Payment As Scheduled	$3400.00

7. In the event that LaSalle Extension University sees fit to cease working relations with you on this project, you will be paid a pro-rated fee constituting payment in proportion of the total fee for assignments completed by you and submitted to and accepted by LaSalle.

8. Within the scope of this agreement, you agree to be available for discussion with the curriculum staff of LaSalle, or with the staff of the Marketing Department or advertising agencies working with LaSalle concerning information necessary for promotion of the Medical Procedures course.

9. You represent and warrant that you are free to enter into this agreement, that all materials delivered by you shall be original with you or based on the selected text, *Medical Office Procedures*, by Bredow, published by McGraw-Hill, and that such materials and the performance of your services shall not violate any copyright, patent, proprietary, personal or contractual right. You agree to hold harmless and indemnify LaSalle against all costs and expenses arising out of any claim, whether or not meritorious, that is inconsistent with, or if established would constitute a breach of, the foregoing warranties.

10. You agree that you will not, without LaSalle's prior written consent, publish or permit the publication of any material written by you in whole or in part that is derived from or competitive to the materials delivered under this agreement.

Please return to me the signed copy of this letter, retaining the original for your files. LaSalle is pleased to have you working on this project.

Sincerely yours,

Charles B. Marshall

Dr. Charles B. Marshall
Vice-President, Education

CBM: css

ACCEPTED: _____ 10/30/78.
Signature Date

APPENDIX B

Sample course author's manuscript submission checklist -- used by authors to insure complete submissions of materials to school*

Date _____

____ OUTLINE (orig. and carb.)

For BOF: ____ PLAN OF INSTRUCTION

____ FRONT MATTER (orig. and carb.)

____ ANNOTATED STS

- ____ Manuscript Title Page
- ____ Inside Cover Page
- ____ Preface
- ____ Acknowledgment Page
- ____ Table of Contents

____ TEXT (orig. and carb.)

____ No. of Chapters

____ REFERENCE MATTER (orig. and carb.)

- ____ Bibliography
- ____ Glossary
- ____ Appendix
- ____ Supplementary Material

____ COPYRIGHT RELEASES (for quotations and other borrowed material)

____ "FOR OFFICIAL USE ONLY"

- ____ Yes
- ____ No

____ CHAPTER REVIEW EXERCISES (CRE) ITEMS/ANSWERS (orig. and carb.)
(Not applicable for BOF)

____ VOLUME REVIEW EXERCISE (VRE) ITEM POOL (orig. and carb.)

- ____ VRE Item Plan
- ____ Title Page
- ____ Items
- ____ MAG Cards

____ ILLUSTRATIONS (2 sets; one may be "faxed.")

- ____ No. of Figures
- ____ No. of Foldouts
- ____ No. of Charts
- ____ No. of Tables
- ____ Copy for Legends: Figs.____, FOs____, Charts____, Tables____

____ Total for Text

____ Total for BOF Answers, CREs, and VREs (if other than text figures)

____ HAVE ALL FORMS, TOs, MANUALS, REGs, PAMPHLETS, ETC., BEEN CHECKED FOR CURRENCY?

Course Author _____

Supervisor _____

Courtesy of U.S. Air Force Extension Course Institute

five

Writing Objectives

Gordon C. Bennett

Introduction to Article

Having had many years of experience in writing and developing correspondence courses for the U.S. Army, Mr. Bennett explains what good instructional objectives are and shows how to prepare them.

While resident courses may limp along and even succeed with poorly constructed objectives, Mr. Bennett argues that for home study "good objectives are vital, for good instruction is impossible without them." He also observes that writing good objectives "can be one of the most frustrating jobs in the world." This article takes the mystery out of this critically needed skill in correspondence instruction.

Writing Objectives

Gordon C. Bennett

COURSE OBJECTIVES: HOW TO DEVELOP THEM

In resident instruction, good objectives make good instruction excellent. But good instruction can be given by knowledgeable faculties regardless of whether written objectives are good or poor. In correspondence course instruction, however, good objectives are vital, for good instruction is impossible without them. Everything hangs on objectives and there is no expert instructor standing behind the student's chair to compensate for the defects of the objectives. The correspondence course writer, therefore, must become an unquestioned expert at writing objectives.

Almost from the time course writers began structuring objectives, the feeling took hold if one knew what an objective was and what it was supposed to do, one could state it in written form. Insufficient attention was paid to the positive need for time, thought, and imagination in the development of objectives. Superficial, quickly written objectives began to appear. Many of these were accepted not only because they looked good in a world which had not known objectives but also because they were largely exempt from critique by evaluators outside the subject field. Such acceptance permitted the continuation of an erroneous impression that objectives were a routine writing matter not requiring special attention. This impression was helped along by an unhappy tendency to "derive" objectives from the already-written instructional text and examination. Actually, as we all know, objectives must precede everything else in the course of instruction.

The development of objectives requires thought, imagination, and time. Time is required for subject matter research and understanding which are necessary preludes to the writing of objectives. Imagination must be applied to the creation of performance situations where actual performance cannot be used, as in a correspondence course. And hard, careful thought must be used in evaluating a "first-draft" objective to determine that its situation is realistic, that its task is challenging, and that the capability described is in fact a product of its related training.

Before going further, we should perhaps ask ourselves the question, "Where do objectives come from?" Dr. David D. Cram, writing in the February 1979 Training/HRD magazine, said "Let's stop kidding ourselves! The only reason to teach anybody anything is to help them to do something in the real world!" If the purpose of teaching them, then, is to prepare people for the real world, it follows that we have to reach into the real world to find out what must be taught. Once more quoting the worthy Dr. Cram, we know that "Instruction that is to be taken seriously must develop skills that are clearly related to the real world. Instruction becomes frivolous and hard to justify when that real-world relationship appears tenuous or haphazard." Thus, our objectives must have their beginnings in the world of work. This means that we have to perform some pre-objective actions before we can ever get down to the business of writing objectives.

First, we have to go out and analyze the job. We have to take a look at the job from the standpoint of what it consists of, and what it consists of are tasks. Our job analysis should yield, therefore, a task inventory. This inventory will, ordinarily, be a large unwieldy product, perhaps consisting of hundreds of tasks. The next thing to be done is to analyze the tasks, to ascertain which of them should be selected for training. Skills and knowledge to support the tasks to be trained are also identified at this time. Task selection and identification of supporting skills and knowledge result in a critical task list which represents the basis for the course of instruction. (See figure 1).

A word here about skills and knowledge. Supporting skills and knowledge are fundamental practices, aptitudes, facts, truths, or principles essential to directly support the accomplishment of a task. They are the motor and mental components of a task that have special requirements for minimum performance. Skills are interrelated with knowledge and constitute critical learning elements.

It must be clear by now that the purpose of knowledge is action. Our

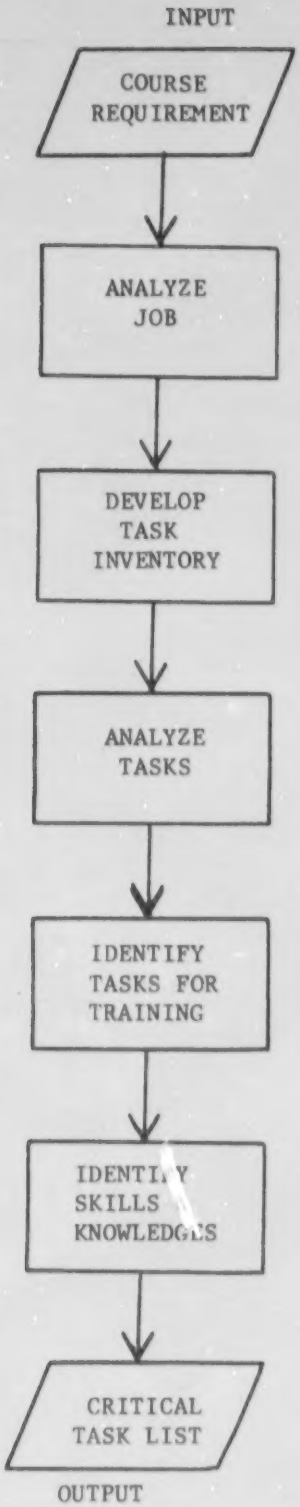


Figure 1. Job and task analysis

experience tells us that knowledge doesn't do a job, people do it. To a supply clerk, knowing the concept for posting incoming items against a record is not the same as being able to actually post the record. Performance capability, then, is the object of training, and objectives should, at one and the same time, define that capability and be based upon it.

Said another way: although knowledge underlies every performance, the knowledge itself cannot make a worthwhile objective even when the knowledge seems to be the sole outcome of the training; rather, the objective must state some application of that knowledge in terms of observable behavior (i.e., performance). When knowledge can be applied, behavior can be observed.

We see, then, that the purpose of objectives is to describe precisely what is to be learned in terms of expected student performance of a task or tasks under specified conditions and to accepted standards. As Robert F. Mager has stated, "An objective describes an intended outcome rather than a description or summary of content."

We've just indentified the three separate elements which form the structure of an objective, but let's set them out once more just to make sure that we have a handle on them (figure 2). They are the *task* which the student must be capable of performing, the *standard of performance* he must reach, and the *conditions* under which he is expected to perform. Each element is vital to an understanding of performance. Some authorities notwithstanding, the arrangement of the elements isn't important; the important thing is that all three are are represented in some way in an objective. Now, let's look at each element in turn:

* -- The *task* is at the center of the objectives, what the student must learn to do. In correspondence instruction, writers of objectives must be certain that the task can be performed within the constraints of the correspondence mode. In brief, the task identifies what the student must do to demonstrate what he has learned.

* -- The *conditions* describe the aiding and limiting factors under which the desired performance of the task is to be demonstrated. Conditions normally include essential features of the environment and the equipment and assistance which may be given or denied the student. Conditions may also include references, supplies, facilities, situations, and problems. In correspondence course instruction, the conditions are particularly important because they are the means of bringing as much of the real world as possible to the student's kitchen table -- the

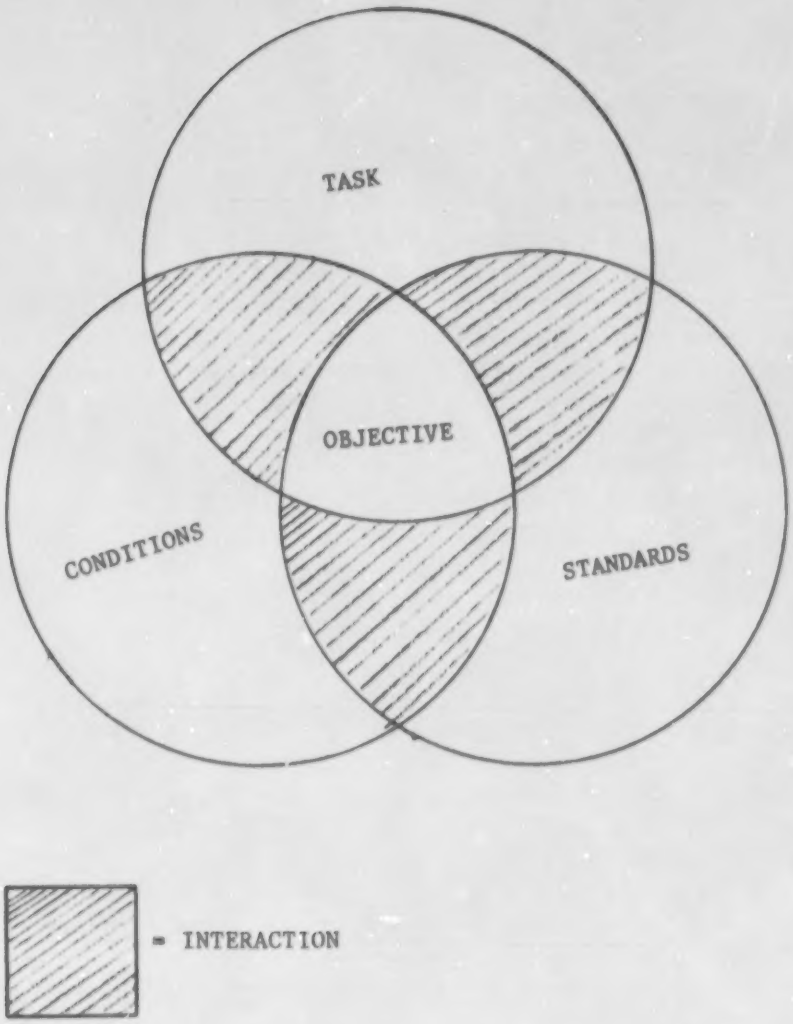


Figure 2. Elements of an objective

place at which it has been thought traditionally the student works his correspondence lessons.

* -- The *standard* is concerned with the accuracy or proficiency which the student must meet. In a standard, we express the degree of specificity we wish the student to attain. The standard also covers that measure of performance that will be acceptable. Basically, there are two standards of performance: those stated in terms of speed and those stated in terms of accuracy. Time standards can be stated as a time limit for one performance or a production requirement during a given period of time. Accuracy standards are reflected either by the degree of perfection required in every act or by the number or percentage of times an act must be performed correctly. An objective may include both time and accuracy standards.

In correspondence course instruction, we have not had too much trouble with the first two elements of the objective, the task and the conditions. The standard element of the objective has been found difficult to apply, however. This is due to the assumption that, because of the "open book" nature of many correspondence lessons and examinations, the student should be expected to make a correct response to a requirement. Moreover, the use of machine-graded exercises in the examination appears to make it inappropriate to apply a standard since the student ordinarily has no opportunities to select a less-than-correct answer and expect to get credit. Thus, many objectives for correspondence course instruction do not carry a stated standard, such omission being construed to mean that the student is expected to attain the objective as set forth with no margin for error. However, for a task that clearly, in a real-world environment, does not require error-free performance, the standard should be stated. Such as objective might read as follows:

> *Given formulas and copies of fuel-consumption tables, compute to within plus or minus five gallons the number of gallons of fuel required to move specified loads over highways.*

The use of a range of choices (for example, "565 to 570 gallons" instead of "567 gallons") is an examination exercise can be used to test attainment of the above objective.

(Incidentally, in the objective above, were you able to differentiate the three elements? If not, here they are: the task is "compute . . .

the number of gallons of fuel required to move specified loads over highways;" and the standard is "to within plus or minus five gallons").

At this point, it appears appropriate to expose a truth about objectives and provide a word about honesty. Writing objectives -- that is, good objectives -- can be one of the most frustrating jobs in the world. The truth is, the ideal learning objective has yet to be written. This brings us to our word about honesty. The worth of an objective lies in its verification, in how well it can be used as a measure of attainment of real-world or near-real-world behavior. It appears that the better an objective is, the harder it is to write examination exercises for it. (I don't know why this is, unless we are just naturally lazy and, thus, reluctant to meet the contract that an objective implies). This difficulty has led writers of objectives to indulge in one of two easy ways out. The first is to write examination exercises that have no relevance to the objective being tested. The second is to go back to the source and write objectives that, because of their irrelevance to real world conditions, are easy to test. The first circumvention is beyond the scope of this article; the second is not.

It is easy to be lured by the attraction of writing meaningless objectives. (How about this one (?!): The student should be able to relate the preservation of freedom to the exercise of individual responsibilities). These objectives the writer will have no trouble testing. What the writer is really doing is displacing the real world from "out there" to the examination paper itself. For him, the real world is the closed and artificial one of the examination he has created. The important consideration becomes not how things are but the ease of testing. In time, the whole sequence of course development gets turned around. Instead of the objectives being written first and the criterion test (examination) next followed by the text (figure 3), the text is written, the examination exercises are derived from the text, and finally the objectives get written (if at all!) to accomodate the examination exercises.

The remedy is for management to get involved, to make certain that the correct sequence is followed. This may very well put a supervisor to work evaluating a set of objectives before the writer is permitted to go on to the examination and then to the text material. (For an assist to writer and supervisor, see the checklist for evaluating objectives at appendix A).

I think we're ready now to get down to the business of tracing the growth of an objective statement. And that growth depends on the

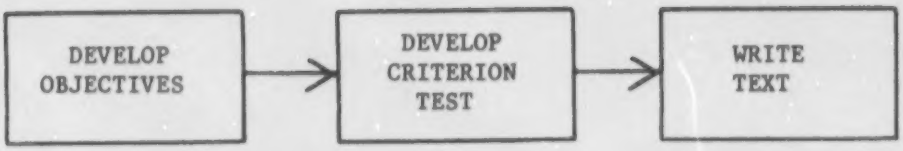


Figure 3. Course development sequence

statement's words.

Specific, concrete words must be used in stating objectives, particularly the task element of an objective. Behavioral terms built on a base of action verbs must be used. Vague and ambiguous terms must be avoided to insure clarity.

Listed below are a number of action terms taken from objective statements. In the space provided for each term, test yourself by indicating whether it is a vague term (use V) or a specific term (use S).

_____ Understand	_____ List
_____ Select	_____ Ability to
_____ Correct	_____ Be familiar with
_____ Know about	_____ Calculate
_____ Classify	_____ Inspect
_____ Provide a general knowledge	_____ Qualify
_____ Orient	_____ Diagnose

You can go to the head of the class if you selected as specific behavioral terms the following: select, correct, classify, list, calculate, inspect, diagnose. The other terms are all vague. However, "orient" may be specific depending upon its use. For example, in the following objective statement it is sufficiently specific because, in the context of the subject, it is a technical term with a percise meeting:

> *Given five different maps and a compass, the student will orient four of the five maps so that map north will coincide with true north.*

The trick is to use terms which do not require interpretation by the student. No word should be used which requires a student to decide for himself or herself what is meant.

If a correspondence course objective has a standard, that standard must be measurable. Standards stated in such words as "effective," "acceptable," "proper," or "average," are not precise enough for accurate measurement. What might be "acceptable" to one student might not be acceptable to another. The outcome of using such terms may be that the writer may have a different understanding of the standard from the one the student adopts. The following standards can be measured accurately:

* Allowing for five to seven percent error.
* To a tolerance of plus or minus .1 ohm.
* Answer five out of seven problems correctly.

After you have written your objectives, you will find it helpful to sequence them. Sequencing is done so that each objective will be placed in optimum relation to other objectives. There are various schools of thought on this aspect of objectives development. The one covered in this article consists of three steps: sorting objectives into closely related groups; sequencing objectives within these groups; and sequencing these groups into an overall course structure.

Developing groups: Assume that the objectives to be sequenced are for an automotive course. Certain objectives pertain to fuel and exhaust systems; others to final drives; and some to electrical systems, power trains, suspension system, auxiliary systems, and the chassis. The objectives are organized into groups under these headings. Some of the groups will contain just a few objectives; others will contain many. Each group's objectives are related because of this sorting; however, they are still in random order.

Sequencing within group: Within each group, the objectives must be individually sorted to determine logical order. It helps if each objective is written out on a separate sheet of paper along with supporting skills and knowledges.

To sequence any two objectives you have to determine the relationship between them. Two learning objectives may have one of the three following: (1) a dependent relationship, in that mastery of the one requires prior mastery of the other; (2) an independent relationship, in that they are totally unrelated and independent of each other; and (3) a supportive relationship, in that some transfer of learning takes place from one objective to the other (see also figure 4).

Next, common-factor objectives are sequenced. These are objectives that are identical or have identical action words and similar objects of the action in the objective statements. Consider an objective concerned with dough mixing. It occurs as a prerequisite objective for various dependent objectives on the shaping, seasoning, and baking of rolls of different types. The objectives' developer will want to teach dough mixing only one time. So, he has one of two choices. He can delete the objective in every appearance after the first appearance or

DEPENDENT	INDEPENDENT	SUPPORTIVE
Skills and knowledges in one learning objective are closely related to those in the other learning objective.	Skills and knowledges in one learning objective are unrelated to those in the other learning objective.	Skills and knowledges in one learning objective have some relationship to those in the other learning objective.
To master one of the learning objectives, it is first necessary to master the other.	Mastering one of the learning objectives does not simplify mastering the other.	The learning involved in mastery of one learning objective transfers to the other, making learning involved in the mastery of the other easier.
EXAMPLES: In math, in order to learn multiplication one must first learn addition. One cannot send messages in Morse Code without first having mastered the codes for each of the letters and numbers. The "sending" skills are totally dependent on the prior learning.	Examples: For a yeoman, "type letters from drafts" is independent of "maintain files." For a wheeled vehicle mechanic, "adjust carburetor" is independent of "torque engine head studs." In both examples, knowing how to do one would not help much with the other.	Examples: "Assemble weapon" has a supportive relationship to "disassemble weapon." "Drive a ¼ ton truck" has a supportive relationship to "drive a 2½ ton vehicle." In both examples, learning to do one would help considerably in learning to do the other.
The learning objectives must be arranged in the sequence indicated by the above hierarchy.	In general, the learning objectives can be arranged in any sequence without loss of learning.	The learning objectives should be placed close together in the sequence to permit optimum transfer of learning from one learning objective to the other.

Source: TRADOC Pamphlet 350-30

Figure 4. Types of relationships between objectives. 71

he can delete it from every place it appears and teach it near the course beginning.

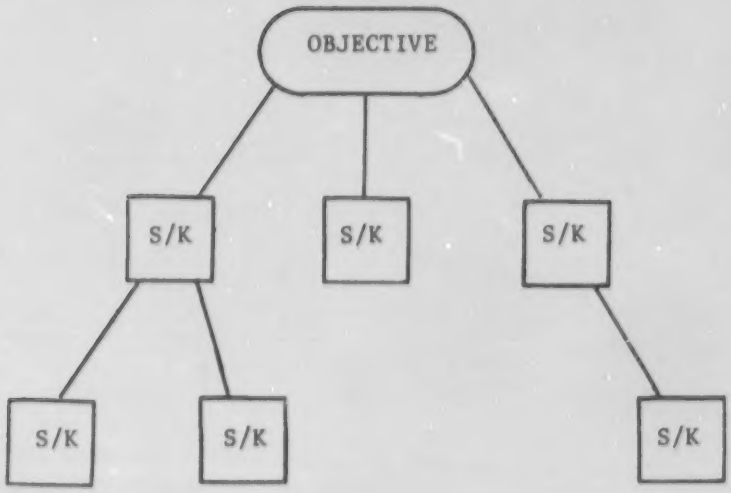
By this time, the developer has arranged his objectives into subgroups and independent objectives. Now he visually examines each subgroup and independent objective and selects the single subgroup or objective which appears to be most complex. He then checks each of the other subgroups and objectives, asking the question, "Should it be reached before or after the last one selected?" He places each subgroup or independent objective on one side or the other of the last selection in its appropriate place in the arrary of other subgroups and independent objectives.

Soon all the objectives in the group will be in a definite sequence. The normal arrangement of objectives within a group tends to take a pyramidal form (i.e., each objective for a complete task will be preceded by a number of other objectives representing other tasks will be preceded by a number of other objectives representing other tasks which will be mastered first). This pyramidal structure tends to hold true for both skills and knowledge within a single objective and for groups of objectives (figure 5).

Sequencing of groups. The groups are then sequenced in the same way that the individual objectives within the groups were sequenced. As an example, consider a group of objectives related to engines. What other groups of objectives must a student meet before he can reach the objectives for engines. The answer is that the student must already have reached the objectives for the electrical and fuel systems. It is apparent that both fuel systems and electrical systems must be sequenced before engines. It is not critical that the student master the objectives of one of these systems before the other. Thus the group sequence would be as illustrated in figure 6.

Sequencing serves three major purposes. It helps give you a clearer picture of your course of instruction. It can make your courses more manageable. It is easier to organize groups of objectives than deal with a large number of individual objectives. And it can help you divide your work with your colleagues if they are available to help out.

Objectives that are effectively grouped and well sequenced can do four other things for you. First, they provide realism. Second, they help define course content and structure. Third, they communicate timely learning goals to students. Fourth, they predict the performance



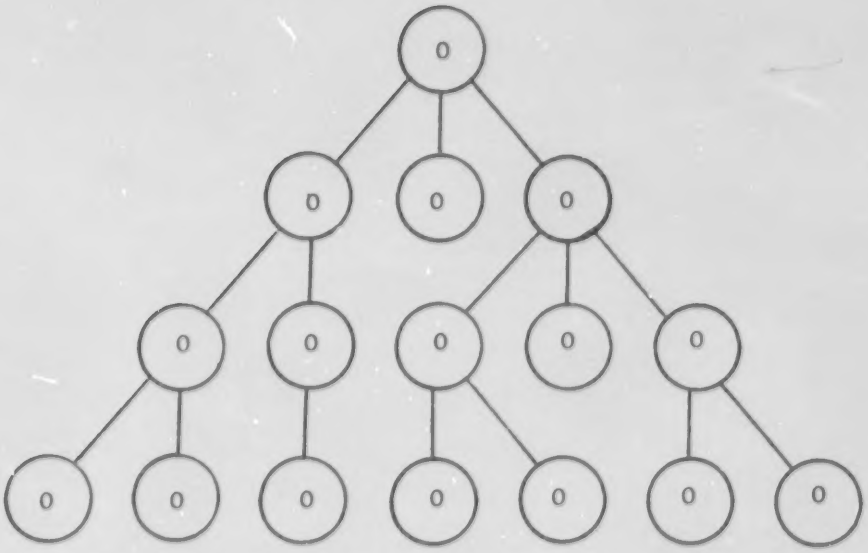


Figure 5. Pyramidal form of sequencing
Top: Sequence within an objective
Bottom: Sequence within a group

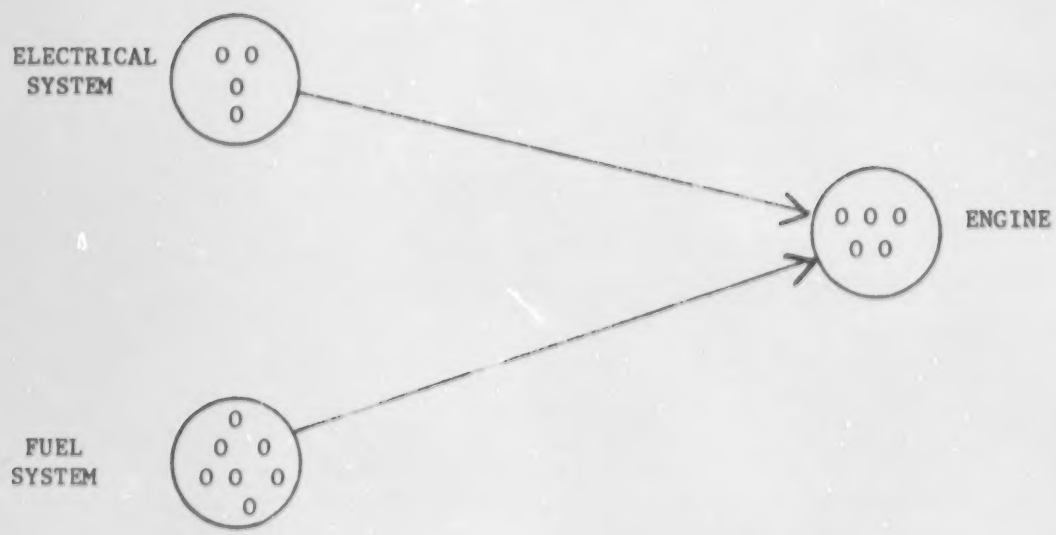


Figure 6. Group sequencing.

of school graduates. Let's examine each of these points in more detail.

Realism. Real-world goals are accomplished by performance of jobs and jobs by performance of tasks. We obtain lists of these tasks through job analysis and fashion them into objectives. Thus the task, which on the job is the basic unit of performance, becomes in the course the basic unit of learning achievement. Objectives are achievement goals derived from the job toward which learning activities are directed. We see how creating objectives from job tasks brings realism to the course of instruction. By relating course materials to job performance realities, we provide the student with a learning experience which closely resembles his forthcoming operational experience. This is what we mean by "relating the course to the job."

Course structure and content. Objectives play an important part in translating realism to course content. Objectives describe the performance capability a student must possess at the end of an annex or larger "piece" of instruction, while skills and knowledge enable the student to attain this capability. Together, they not only explicitly define details of the course content but also guarantee the relevancy of such details.

Timely learning goals. In their communicative role, objectives have potential for both enhancing and damaging student motivation. If introduced all at once, they may overwhelm the student and cause loss of confidence. A judicious and piecemeal introduction of the objectives, in a manner intended to serve the student, will not distract and will give the student a sense of purpose as well as accomplishment.

Graduate performance. By deriving objectives from job tasks and creating valid achievement tests based thereon, the school can more accurately predict how its graduates as a whole will meet the needs of the field. The school can obtain a much higher correlation between student achievement scores and student ability to perform on the job.

CONCLUSION

I hope the above discussion has been useful to you and, more importantly, has provided some fresh insight into the serious business of developing meaningful and workable objectives for correspondence course instruction. If you have put a set of objectives together recently it might be worthwhile to check your work against what we've covered

in this article. The questions which follow will help you in this regard. If you can answer each of the questions with a YES, you probably have a good and usable set of objectives.

1. Have I stated precisely what the student will be able to do as a result of successful completion of the course or of an annex of the course?

2. Have I stated the standard to which the student must be able to carry out the desired performance?

3. Is it possible to measure exactly that the student can perform to the standard required?

4. Have I indicated what the student will be allowed to use and not use in demonstrating attainment of the objectives?

5. Are the objectives stated in clear, concise, specific, and measurable terms?

6. Have I properly grouped and ordered the objectives?

7. Have I tested the objectives to make certain that they accurately and completely communicate to the student the learning to be achieved?

8. Have I provided in the course package all the resources needed by the student to assist in attainment of the objectives?

Were all your answers YES? If so, congratulations! If not, try the quiz in Appendix B. What the heck! Try it anyway.

APPENDIX A

Checklist for Evaluating Objectives

1st digit	2nd	3rd	4th	5th
Factor (1) Type of Action Element (Task)	Factor (2) Extent of Action Description	Factor (3) Relevancy of Student Action	Factor (4) Completeness of Objective Construction	Factor (5) Precision Used to State Action, Conditions, and Standards.
Levels: 1. Specific Action 2. Generalized Skill 3. Generalized Behavior or Attitude	Levels: 1. Fully Described 2. Partially Described 3. Stated Only	Levels: 1. High Relevance 2. Moderate Relevance 3. Low Relevance	Levels: 1. Action, Standards and Conditions 2. Action and Conditions or Standards 3. Action Only	Levels: 1. Fully Precise 2. Partially Precise 3. Vague

The checklist illustrates the arrangement of five factors for coding purposes. Thus, a coding of "2, 1, 1,1,1"would indicate a rating for an objective that: (1) involved a generalized skill, (2) fully described the action, (3) was highly relevant to the field task, (4) stated action, standards, and conditions, and (5) precisely stated the action, standards, and conditions.

Analyzing and classifying objectives will help the course developer and his supervisor decide if an objective is acceptable for training purposes or if it should be further refined before final acceptance. Also, since an ideal objective would rate a classification code of "1, 1, 1, 1, 1," most objectives rated less than ideal can be improved by improving the specific lower rated factors. Any objective that receives a rating of 3 for factors 1, 3, 4, or 5 is not acceptable and must be revised.

Source: TRADOC Pamphlet 350-31

APPENDIX B

Review Quiz

The exercises below will provide you with a review of several of the key points in the article.

Read each quiz (Q) frame and write your answer in the space provided while covering the answer (A) frame below. When you have written your answer, uncover the answer frame. If you have made a wrong answer, erase it (you were using a pencil, weren't you?) and enter the correct solution.

Q1. Study the objective statement below. Is this the type of objective you would expect to be accepted as valid? Why?

Given a list of principles, the student will select the principles of management with 100 percent accuracy.

A1. Not valid. Doesn't come from the real world. Your boss isn't going to ask you to recite the principles of management, he's going to require you to put them to work. Moral: Having the right elements in your objective does not necessarily a good objective make!

Q2. Have a try at rewriting the objective in Q1.

A2. The rewrite below is better than the original statement, but you, no doubt, did better. The idea is to force the student to apply management principles. (NOTE: In addition to the objective statement below, you will probably have to write additional statements so as to cover all management principles. See how hard it is to do a thing right?)

Given a situation requiring the formal coordination of a recommended position paper, the student will, without error, identify the appropriate steps in the coordinative process and the individuals with whom coordination is to be effected, including order of coordination among the individuals.

Q3. Examine the objective statements below. Which is the better? Why?

A. Given a partially prepared clothing record and a situation involving replacement of work clothing, the student will make the necessary entries on the clothing record without error.

B. The student will post a clothing record to reflect replacement of work clothing.

A3. A is the better, of course. A gives the three elements that make up an objective. B doesn't have a standard and it's not really certain the student is going to get that clothing form as part of the conditions.

Q4. Study the objective statement below. Do you think the objective is fair to the student? Explain your answer.

Given a blank form, a typewriter, and copy to be typed, the student will type a completed interoffice memorandum, the finished product to be prepared in a given format and without error (corrections count as errors).

A4. Because it probably is not realistic, the objective is not fair. What office is going to require you to type an interoffice memorandum without correctable errors? The objective exceeds real-world expectations.

Q5. Take another look at the objective in Q4. Anything left out?

A5. How long will the student have to type the memorandum? A time standard, as well as an accuracy standard, is needed. This type of objective lends itself to a time standard because task duration would be a real-world consideration.

Q6. Look at another objective statement (below). Anything wrong with it? Explain, please.

> Given data, identification of five equipment items to be turned in for repair, and five blank turn-in forms, the student will prepare the form correctly four out of five times.

A6. Looks pretty good to me; but if you don't like it, hack away at it. Remember, no objective statement is perfect. This doesn't mean, however, that we should settle for remediable imperfection, much less strive for it.

Q7. Let's go a little further and match up an objective with its implementing examination exercise. Check out the pair below and determine whether the examination exercise tests attainment of the objective.

> O: Given the job of preparing a menu for a meal, the student will determine whether the meal is heavy or light and then make a selection of three appropriate desserts.
>
> X: SITUATION: You are the head chef in the kitchen of a well-known hotel. You are selecting desserts for the dinner menu

which will include vegetable soup, roast pork, creamed potatoes, asparagus with cheese sauce, and a tossed salad. You have ingredients for the following desserts:

a. Bread pudding
b. Peaches in syrup
c. Lemon wafers
d. Cheese cake
e. Lime gelatin
f. Fresh fruit
g. Apple pie with cheese
h. Chocolate layer cake

REQUIREMENT: Select three appropriate desserts to offer your diners.

A7. Actually, the objective/exercise combination is not bad. Really, quite good. Note that the standard - - "without error" - - is implied. Even so, the grader could give partial credit in the examination if all the right answers aren't chosen. (I'm not telling what the right answers are!) The examination exercise illustrates a way of testing a difficult task in the correspondence mode. Also, the exercise lends itself to machine-grading.

Q8. Here is another correspondence course examination exercise. I won't ask you to determine whether it's a good exercise, it's not. But can you tell what was wrong with the objective?

SITUATION: You have just been hired as controller of a mid-sized manufacturing company. You report to your boss, the company president, who tells you to sit down and offers you a cup of coffee. After several minutes of conversation on indifferent matters, the president leans across his desk and asks you, "What are the functions of a controller?"

REQUIREMENT: List the functions of a controller.

A8. Aside from the fact that the situation is absolutely useless (you can meet the requirement without reading the situation), the objective must have been of the same variety as the Mickey Mouse one in Q1. The real world is forgotten. You don't get asked about functions in the real world, you perform them in work situations and are measured against corporate expectations. (Besides, what did the president ask the prospective controller during the job interview?)

In the unlikely event that the objective was okay, then what we have here is a different sort of breakdown in management responsibility. The writer's supervisor didn't check to make certain that the writer was developing examination exercises based on the objective, presumably approved beforehand. Remember, the objective sets forth the specifications for its resultant examination exercises. Look at course objectives as the course's blueprints. Unless he wants to flirt with disaster, an architect or engineer wouldn't ignore his blueprints. Should you?

Q9. The rather detailed objective statement below (adapted from a Navy source) appears to be missing an element. What is it? Does the omission really matter?

> Perform arithmetic operations with binary numbers. Convert decimal numbers (containing no more than four digits) to their equivalents; perform the arithmetic operations of addition, subtraction, multiplication, and division; and convert answers back to decimal numbers. The student must show all work for

each problem. Out of four problems for each arithmetic operation, three must be correct. In all cases, correct procedures, as set forth in student workbook, must be used.

A9. There do not appear to be any conditions. However, this may not be significant; availability of paper and pencil can be assumed. However, if a job or learning aid, such as a decimal-to-binary conversion table, were necessary, it would be provided and identified in the conditions element of the objective statement.

Q10. And now, back to basics. Below are examples of the task elements of objective statements. Which are vague behavior descriptions and which are specific enough for inclusion in statements of measurable objectives? Check off the vague descriptions. (Don't peek at the exercise in the body of the article.)

A. Know principles of troubleshooting.

B. Solve an Ohm's Law problem.

C. Distinguish between . . . and . . .

D. Be familiar with recipes.

E. Comprehend inductance.

F. Draw a block diagram.

G. Show direction of current.

H. Be aware of safety precautions.

I. Fill out a tax return form.

J. Understand Ohm's Law.

A10. Are congratulations in order? Did you identify A, D, E, H, and J as vague descriptions? The verbs used in these descriptions do not describe measurable student performance; none of them specify <u>how</u> student behavior will be demonstrated. Remember, when describing a behavior, state as explicitly as possible what the student is to <u>be able to do</u> upon completion of the topic or subject covered by the objective.

APPENDIX C

Selective Bibliography

The military services have been into learning objectives since, at least, the early 1960's. As a result, a considerable inventory of military literature on objectives has grown up. (Some items are listed below.) This literature is largely reflective and owes a debt of gratitude to individuals, Mager et al, who have done yeoman work in the field. However, those of us who have spent the better part of our working lives in military education tend to look inward, rather than outward, when called upon to perform such chores as writing articles. We look to our military references first, not just because they are at hand, but also because we may have contributed to them in varying degrees. Accordingly, these public-domain publications share in many ways a commonality of terms, phrases, and symbols which belong to all of us. Called upon to say something about objectives, we often, consciously or unconsciously, dip into this reservoir of language and illustration. We do this with apologies in advance, and with no remorse whatsoever.

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six

Working Magic with Manuscripts

Charles B. Marshall

87

Introduction to Article

Dr. Marshall provides some valuable insights on how one can transform the rough copy of authors' manuscripts into workable home study lessons.

He presents a clear case for good first lessons, and quips that "home study education manuscripts are far too important to be left to writers."

His checklists provide practical guides for insuring successful lesson materials. Decades of solid home study experience have been condensed into this blueprint for home study copy editing.

Working Magic with Manuscripts

Charles B. Marshall

The key to turning rough copy prepared by authors into workable home study material lies mainly in defining the elements of first rate correspondence study offerings.

Over the years at La Salle Extension University we devised a formula which may be helpful to our colleagues in the home study field. While one must always be careful to avoid the suggestion that he has some little "magic black box" which will work at all times for all purposes, nonetheless, one can accumulate experience to the extent that that experience can almost be codified into a set of general rules.

As one who reads a number of manuscripts prepared by subject area specialists, whom often know their subject intimately but may not be familiar with home study materials, I have measured the work product of authors using a series of checklists. These checklists, developed over two decades of home study experience, have enabled our staff members to evaluate manuscripts with a certain consistency that, at best, allows us to convert the manuscript into first rate material and at worst, eliminates obvious errors.

THE FIRST LESSON

Because one of the most essential parts of home study is a successful first lesson, we spend almost as much time on the manuscript for the first lesson as we do on such major items as writing course objectives and examinations. Over the years, we've devised a few general

rules concerning the characteristics of a good first lesson.

In a good first lesson the home study student needs the following things:

(1) He needs to be resold. Part of our educational role is to reassure him that we are what our respresentative or advertising said we were -- a reputable home study school that can help the student to raise his income or otherwise improve his personal life.

(2) He needs to be inspired. He must be shown that what lies ahead is fun as well as work.

(3) He needs success and renewed self-confidence. He may have failed before; now, we must let him succeed! To do this, we must give him something which he can conquer, so as to re-establish his faith in himself.

(4) He needs clerical help. He is lost with forms, second sheets, staples, paper clips, "fold here," and the search for an 8½ x 11 inch paper.

To fulfill these needs, we devised a formula that tends to work so as to achieve high response. These are the characteristics of a good first lesson:

(1) It is brief -- rarely over 20 printed pages.

(2) It builds in a "resale" by briefly reiterating the benefits of the course, career potentials, and the school's credibility.

(3) It inspires, which usually implies very carefully selected artwork and supportive copy.

(4) It contains a deliberately easy self-quizz, so that even before submitting the first examination, the student clearly sees he can do this work. In effect it sets up a "series of successes" (S.O.S.) which logically follow from a first step.

(5) It gives the student everything he needs. He is never asked to "On a plain piece of paper, sketch . . . "

(6) It is clerically self-contained. The student is never asked to staple, clip, or attach anything. All forms are preprinted for him.

(7) It does not involve essays or projects which require literary or artistic skill. These "high-diving" challenges should come only after the student has found he really can "swim" successfully.

(8) Exam instructions are made obvious: It is literally impossible not to understand what is to be done with it.

(9) The first lesson clearly explains what the student is to do after he makes his first submission. In placement, this information is structured so as to be read after the student has mailed his first submission to us.

(10) Because some students might possibly be offended by an overly simple first lesson, there should be a courteous disclaimer frankly advising the student that this is a "warm up" exercise and that we shall shortly present him with more challenging materials.

(11) The text starts with something familiar to the student, so that he is led from the known to the unknown.

If we made up a checklist for the above, we would then measure every first lesson against these points:

		YES	NO
(1)	Is the reading under 20 pages?	X	
(2)	Is it properly broken up with motivational art?	X	
(3)	Is there at least a paragraph or two of resale?	X	
(4)	Is it generally non-technical and inspiring?	X	

		YES	NO
(5)	Does it contain a confidence-building self-quiz?	X	
(6)	Does it provide the student with the actual sheet of paper on which to submit the exam?	X	
(7)	Is the examination sheet one page, so as to eliminate stapling, clipping, etc.?	X	
(8)	Are all forms preprinted so that only name and student number need to be filled in?	X	
(9)	Are both the lesson reading materials and the examination sheet physically obvious in the first package?	X	
(10)	Is the examination free from essay assignments, projects, or artistic demands?	X	
(11)	Is there a disclaimer as to the ease of the first lesson and a pledge of some challenging material to come?	X	
(12)	Is there, immediately after the first submission, a very clear "where do we go from here" road map?	X	
(13)	Does the text go from the known to the unknown?	X	
(14)	Lastly, are all instructions crystal clear?	X	

CAPITALIZING ON THE GOOD FIRST LESSON

Assuming we've now managed to achieve the good first lesson, we must now follow the first lesson with an "aftermath of excellence." What is an "aftermath of excellence?" Generally, we have found that the characteristics of subsequent lessons should follow these general guidelines:

(1) Each lesson is just slightly more difficult that the preceding lesson, the increase rarely exceeding 10% in length.

(2) At a certain point the course attains its standard level of complexity so that, after a handful of comparatively easy initial submissions, the student faces a body of work that is approximately uniform in its challenge.

(3) Whenever new terms are used, there is a careful explanation of those terms buttressed by examples of the use and application of the terms.

(4) Although it is a vice in residential teaching, purposeful repetition is a virtue in home study, where the best courses repeat, rephrase, reiterate, re-emphasize, restate, etc., etc., on the theory that reinforcement is hard to overdo in home study. Hence, a point made in lesson two might be restated in lessons 3, 7, and 32 with benefit to the student.

(5) A certain degree of "comic relief" should be built in, wherein, on occasion, the material involves a bit of humor or a "fun project." Home study need not be grim. As former President Eisenhower once put it, "You can smile, yet still be a serious person." Courses with 40% completion rates frequently smile.

(6) Exam questions are "fair and findable," as one scholar put it. No question should be deliberately inserted "to separate the men from the boys." Nor should any question ever be "unfindable." In home study, the answer to every examination question should be found in either the text or a reasonable inference from the text. At no time, for example, should test number 14 ask a question not covered until lesson assignment number 19.

(7) Examinations, like lessons, must follow the pattern of mild graduation of complexity. They should not, for example, "leap" from 10 true and false questions to eight demanding essay questions.

(8) Once again, as in starter lessons, the instructions should be clear. One home study author said this best: "Do not merely write instructions that can be understood. Rather, write instructions that cannot possibly be misunderstood."

(9) There should be a solid review of the past lesson as a foundation for the current lesson.

(10) There should be a "preview" of what lies ahead.

(11) Most important of all, every lesson must seem "doable," that is, each lesson and examination must be of such a size and complexity that the student should feel he can complete it in the very near and foreseeable future (e.g., tonight, Saturday, or this weekend). Lessons which require such work as may take a student several months simply, as a matter of home study reality, rarely get done.

(12) Lastly, the student should be supplied with everything he needs. He should not be asked to scurry about to find paper, staples, crayons, etc. Nothing should require him to get up from his desk or table when he sits down to study a well prepared lesson.

If we were to make these formulations into a checklist, our document might look something as follows:

		YES	NO
(1)	Is each of the early lessons slightly harder and longer than the prior lesson, but not more than 10% more challenging?	X	
(2)	Is there a standard level of complexity at a certain point in the course?	X	
(3)	Are new terms properly prefaced and explained?	X	
(4)	Are there adequate reinforcement methods?	X	
(5)	Does the course "smile" occasionally?	X	

		YES	NO
(6)	Are test questions "fair and findable?"	X	
(7)	Do tests follow the pattern of graduated complexity?	X	
(8)	Are instructions absolutely clear?	X	
(9)	Is there an adequate review of prior lessons?	X	
(10)	Is there an inspiring preview of what is coming?	X	
(11)	Is every lesson and every test "doable?"	X	
(12)	Lastly, do we supply the student with everything he needs?	X	

HOW TO ACHIEVE HIGH GRADUATION RATES

Let's assume that we now have achieved a first rate opening lesson, followed by subsequent lessons which meet most of the characteristics on the previous checklist. What can we then do to achieve high graduation rates?

Although it may sound inane, short courses produce graduates; long courses don't. We continue to produce overly long courses mainly because of an honest Puritan ethic that instills in most authors and editors a sincere desire to make each course truly authentic. Can you have brevity and quality? Yes -- and here is how.

Home study is, after all, independent study. Our problem is that we often tend to; (1) give the student more than he needs to know to achieve the stated course objective and, (2) to over-test him to make sure he knows his materials. Once again, both author and editor have the highest ethical motivations: "We'll enrich this course so it has everything" and "Our examinations will be frequent and so hard that our diploma will be indisputable."

However, when we go astray on these tangents, we forget that every student is also a customer: he doesn't want to know everything and he

doesn't want to convince everybody. He rather wants to learn enough to get a job and to convince one employer to give him a chance.

If we remember our basic customer commitment, our courses, while of the finest quality, should be Spartan when frills are involved. Optional materials may abound for the ambitious student, but they should not be forced upon the student who wants to "learn and to earn" soon. Hence, our courses must constantly relate to stated objectives in such a way as to exclude all extraneous items. Our examinations should be such as to assure our institutions that, before a diploma is issued, the student has indeed learned enough to meet his stated goal -- and no more.

The net result is that, short of a magic "black box," a few rudimentary checklist questions evolve by which authors and editors should measure every lesson and every course.

Converting these characteristics into a checklist for completion rates, we might insist that every manuscript should either contain or be edited to contain conformity to the following six points:

		YES	NO
(1)	Do we have a clearly stated course objective in mind as we create this course of instruction?	X	
(2)	Is this lesson material necessary to achieve the stated objective?	X	
(3)	Is each examination necessary to demonstrate if the student knows enough to attain the stated objective?	X	
(4)	Are there enrichment and optional materials? (These must be, however, clearly designed as beyond the scope of the stated objectives.)	X	
(5)	Is this course truly devoid of "busy work" submissions and projects so that nothing stands in the way of an expeditious submission of truly necessary examinations?	X	
(6)	Over the long haul, is consistent motivation built into each lesson?	X	

CONCLUSION

While there may very well be manuscripts that do not conform with all of the points raised in the checklists presented above, it would be very difficult for any manuscript which has been brought into conformity with these checklists, to go too far astray from meeting the demands of the home study student in a highly satisfactory form.

As one diplomat has commented, "War is too important to be left to generals." By the same token, home study education manuscripts are far too important to be left to writers. When the manuscript comes to the home study school, it is one of the cardinal duties of the Education Director and his editorial associates to take the raw material, which may well be substantively sound, and convert it into home study material that will reflect favorably on the school, the profession, and the method of instruction, while bringing the maximum possible benefit to the home study student.

APPENDIX A

Sample page from a final lesson of a TV Servicing Course

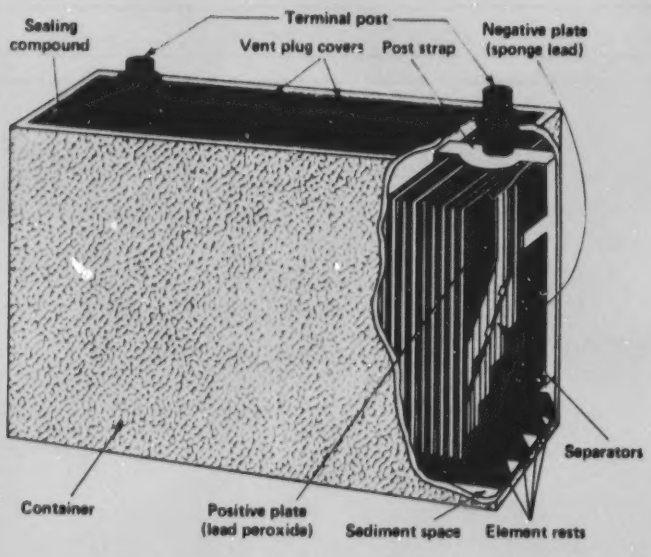


Figure 4—Physical Construction of a Wet Cell Battery.

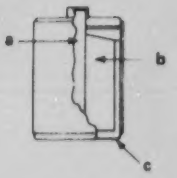
quick quiz

1 Label the parts of this dry cell.

a _____

b _____

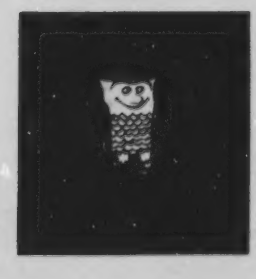
c _____



2 The charges shown on this dry cell are correct ____ incorrect ____. (Check one.)

3 The voltage of a fresh dry cell is about (Check one.)

a 1 V ____ b 1.5 V ____ c 2.5 V ____



answers to quick quiz

1. a. Carbon rod b. Electrolyte c. Zinc 2. incorrect. The carbon rod is positive (+) and the zinc charge is negative (−). 3. b. (1.5 V).

Courtesy Commercial Trades Institute

seven

Managing Text Readability

Lee Hughes

Introduction to Article

Another essential skill required of home study educators is the ability to do reading level checks of all course materials submitted for student use. Too often, ignoring the reading level of a course, or mismatching a target student audience with an inappropriate reading level in texts, has led to student frustration and excessively high course drop outs.

Mr. Hughes has selected for discussion from nearly 50 reading level formulas, four which are useful for home study. He also provides practice examples for us to apply the various reading level tests.

Mr. Hughes argues that text readability cannot be determined from intuitive judgment alone, and that home study students deserve to be able to read what they are buying from schools.

Managing Text Readability

Lee Hughes

"Imagine, if you can, what your life would be like if you could not read or if your reading skills were so meager as to limit you to the simplest of writings, and if for you the door to the whole world of knowledge and inspiration available through the printed word had never opened.

"For more than a quarter of our population this is true. For them education, in a very important way, has been a failure, and they stand as a reproach to all of us who hold in our hands the shaping of the opportunity for education.

"These individuals have been denied a right -- a right as fundamental as the right to life, liberty and the pursuit of happiness -- the right to read."

With these words, the late James E. Allen, U.S. Commissioner of Education, launched a campaign against the blight of illiteracy which, paradoxically, thrives within the most highly educated and technologically advanced civilization in the world. One man writes of his walk among the craters of the moon; another of his countrymen is unable to read about it!

This is the setting in which we education directors exercise our skills. We seek to teach students by the written word, when a great portion of our target population either cannot read or has a difficult time reading. At the same time, we are producing excellent course materials which have been written by highly qualified subject matter experts. These experts

who are writing about their areas of proficiency tend to write at the level of their own knowledge. Many of the basic concepts are taken for granted or considered to be common knowledge, when in fact they may be mind-boggling to a beginner and even worse to a beginner who has a reading problem. It is a difficult task for a writer with an advanced degree of knowledge in a particular subject area to write about that subject at the elementary entry level that may be required. It is also difficult to tell someone how to write so that the material can be read and understood by a particular target population.

When writing for students with low reading levels, simply using short words and short sentences does not insure readability. Because most reading level formulas use sentence length and number of syllables as key factors in the determination of the numerical grade level, obviously the smaller numbers derived from short sentences and short words will produce a low grade level. However, all occupations have their own language or vocabulary that is usually readily understood by persons in the occupational field. Much of the vocabulary may be three syllable words which are common terminology and may be more easily identified and understood than a contrived sentence designed to eliminate polysyllabic words. A ready example of this is in the automotive field where words such as "transmission" and "differential" are common to any mechanic, but because of the number of syllables such terms greatly inflate the computed reading level of written material which contained these words.

Clearly there exists a general problem of matching course materials to average reading grade level of students. The materials should be as basic as possible to appeal to the average student, but not so over simplified that the students are insulted by the feeling that you are "talking down to them." The comic book approach, for example, does not appeal to everyone, especially when used for instructional purposes.

It appears that the "best" method for writing to a particular grade level is to have the authors periodically test samples of the course materials as they are being written with a reliable reading grade level formula. A review of the literature shows the existence of over 50 formulas for determining reading grade level. They range from the sublime to the ridiculous in their ease of use (based primarily on the mathematical rigor or counting procedures involved.) Many of the formulas have high reliability when compared to others. Some have poor reliability.

The problem of selecting the best formula for your situation then be-

comes a matter of personal preference. For whatever reason you select a formula, stick with it and rely on it as an indicator. Do not regard it as the sole judge of readability and don't skip from formula to formula just to find something to validate your opinion of the readability of instructional materials.

Some schools refuse to use a formula. They dismiss reading difficulty or the assessment of reading levels as not being a problem. They state that they intuitively know that their courses are matched to the reading levels of their intended students. Although this may be true, it is a cavalier attitude that is difficult to substantiate if one analyzes completion and graduation rates. Readability of materials may be a reason for low graduation rates in courses. You owe it to your school and your students to at least sample your materials. Each formula has its advantages and disadvantages. Make some comparisons and then select one that is suitable for your situation.

Application of four readability formulas will be demonstrated using an article from the WASHINGTON POST. The four readability methods are:

1. FLESCH
2. DALE-CHALL
3. FOG
4. FORCAST

FLESCH READING EASE SCORE

Rudolf Flesch is no stranger to correspondence study. A one time member of the Famous Writers School Guiding Faculty, he also assisted the Federal Trade Commission in making its trade school rule more readable to prospective students. Together with Gunning's Fog Index, the Flesch score is perhaps one of the most popular checks on readability.

The FLESCH score involves a formula and a table which is provided below. The formula is: Reading ease score = 206.835-[1.015 (avg. sent. length) + .846 (syllables per 100 words)] .

To use the formula, you first select a passage and count 100 words. Next, divide the 100 words by the number of sentences comprising these 100 words. Insert this figure in the formula as the "average sentence length." Next, count the number of syllables (as spoken) in the 100

words. Insert the result in the formula. By performing the mathematics involved in the formula you will obtain the reading ease score. The grade level for the passage is obtained by referring to the table provided below:

Score	Interpretation	Grade Level
90-100	Very Easy	5
80-89	Easy	6
70-79	Fairly Easy	7
60-69	Standard	8-9
50-59	Fairly Difficult	10-12
30-49	Difficult	13-16
0-29	Very Difficult	College Grad

To determine the grade level of this article which appeared on the front page of the WASHINGTON POST, first count 100 words.

"President Carter said yesterday the nation's $21 billion welfare system should be 'scrapped entirely' for a program that would guarantee an income for all who were unable to work and a job for those who could.

"To gain those objectives, the President made clear at a briefing in which he gave a broad-brush outline of his plans, the administration was prepared to make the government what amounted to an employer of last resort through the creation of as many as 2 million public service jobs.

"Mr. Carter said there would be 'a heavy emphasis on jobs' in the new welfare program.

"The White House plans to use the program outlined by Mr. Carter to at least partially offset mounting criticism from blacks and labor that the President has abandoned his full-employment goals.

"Democratic congressional leaders have told Mr. Carter he has until May 31 to come up with a full-employment program of his own before they allow hearings to begin on the controversial Humphrey-Hawkins full-employment bill."

The one-hundredth word is new in the third paragraph. There are three sentences in the 100 words. This gives an average sentence length of 33.3. The next step is to count the syllables in the 100 words. There are 142 syllables. Insert this data in the formula and compute.

$$\begin{aligned}\text{Reading case score} &= 206.835 - [1.015(33.3) + .846(142)] \\ &= 206.835 - [33.799 + 120.132] \\ &= 206.835 - 153.931 \\ &= 52.90\end{aligned}$$

Refer this score to the table above and you get a reading grade level of 10th to 12th grade.

DALE-CHALL

The next formula is the Dale-Chall formula. In order to use it you must have the Dale List of 3000 Familiar Words which is included at the end of this article (Appendix A).

The formula is: $\text{Raw score} = .1579\, x_1 + .0496\, x_2 + 3.6465$

x_1 = Percent of words not on Dale list of 3000 common words
x_2 = Mean sentence length in words.

Using the same article from the WASHINGTON POST, let us compute the reading grade level using the Dale-Chall formula.

The first step is to count 100 words which was done for the Flesch formula ("new" in the third paragraph). The next step is to determine how many of the 100 words are not on the Dale list. Proper names are not counted.

"President Carter said yesterday the Nation's $21 billion welfare system should be 'scrapped entirely' for a program that would guarantee an income for all who were unable to work and a job for those who could.

"To gain those objectives, the President made clear at a briefing in which he gave a broad-brush outline of his plans, the administration was prepared to make the government what amounted to an employer of last resort through the creation of as many as 2 million public service jobs.

"Mr. Carter said there would be a 'heavy emphasis on jobs' in the new welfare program.

"The White House plans to use the program outlined by Mr. Carter to at least partially offset mounting criticism from blacks and labor that the President has abandoned his full-employment goals.

"Democratic congressional leaders have told Mr. Carter he has until May 31 to come up with a full-employment program of his own before they allow hearings to begin on the controversial Humphrey-Hawkins full-employment bill."

There are eighteen words not on the Dale List and the average (mean) sentence length is 33.3 words. Insert these figures in the formula and compute.

$$\begin{aligned} \text{Raw score} &= .1579\, x_1 + .0496\, x_2 + 3.6365 \\ &= .1579\,(18) + .0496\,(33.3) + 3.6365 \\ &= 2.842 + 1.652 + 3.6365 \\ &= 8.1305 \end{aligned}$$

Refer the raw score to the correction table on the last page of the Dale Word List at Appendix A of this article. The raw score of 8.1305 is equivalent to an 11th - 12th grade reading level.

FOG INDEX

Again using the same article, here is an example of determining reading grade level by use of the Fog index. The steps are listed below:

1. Select sample passage of approximately 100 words.

2. Assign a value of one to all one and two syllable words.

3. Assign a value of three to all remaining words.

4. Determine Fog count by adding the values.

5. Divide the Fog count by the number of sentences.

6. If the average Fog count is over 20, divide by 2 to obtain grade level.

7. If the average Fog count is under 20, subtract 2 and then divide by 2 to obtain grade level.

"President Carter said yesterday the nation's $21 billion
1 1 1 3 1 1 1 1

welfare system should be 'scrapped entirely' for a program that
1 1 1 1 1 3 1 1 1

would guarantee an income for all who were unable to work and
1 3 1 1 1 1 1 1 3 1 1 1

a job for those who could.
1 1 1 1 1

"To gain those objectives, the President made clear at a
1 1 1 3 1 3 1 1 1 1

briefing in which he gave a broad-brush outline of his plans,
1 1 1 1 1 1 1 1 1 1 1 1

the administration was prepared to make the government what
1 3 1 1 1 1 1 3 1

amounted to an employer of last resort through the creation
3 1 1 3 1 1 1 1 1 3

of as many as 2 million public service jobs.
1 1 1 1 1 1 1 1 1 1

"Mr. Carter said there would be 'a heavy emphasis on jobs'
1 1 1 1 1 1 1 1 3 1 1

in the new welfare program.
1 1 1

"The White House plans to use the program outlined by Mr. Carter to at least partially offset mounting criticism from blacks and labor that the President has abandoned his full-employment goals.

"Democratic congressional leaders have told Mr. Carter he has until May 31 to come up with a full-employment program of his own before they allow hearings to begin on the controversial Humphrey-Hawkins full-employment bill."

After assigning the values to the 100 words, add the values. The total or Fog count is 122. Dividing this by three gives 41. Because this is over 20, you must then divide by 2 to obtain the grade level. This would be 20 or college graduate. As you can see, the Fog index does not equate well to the other two formulas on this passage. This is primarily because of the length of the sentences.

FORCAST

One more formula will be used to determine reading grade level. Called Forcast, it is an acronym of the names of the three men who devised the formula. Forcast was developed primarily for use with military, technical publications but has applicability to other technical material. It takes into account the use of polysyllabic words that are known to the reader because of their use in his occupation. It is an exceptionally rapid means of determining reading grade level if it is applicable to your school's materials.

$$\text{Reading grade level} = 20 - \left[\frac{\text{no. of one syllable words in 150}}{10}\right]$$

Using the same newspaper article, count the first 150 words. Note that the other formulas used 100 words. The 150th word is with in the last paragraph. Now count the number of one syllable words in the 150-word sample.

"President Carter said yesterday the Nation's $21 billion welfare system should be 'scrapped entirely' for a program that would guarantee an income for all who were unable to work and a job for those who could.

"To gain those objectives, the President made clear at a briefing in which he gave a broad-brush outline of his plans, the administration was prepared to make the government what amounted to an employer of last resort through the creation of as many as 2 million public service jobs.

"Mr. Carter said there would be 'a heavy emphasis on jobs' in the new welfare program.

"The White House plans to use the program outlined by Mr. Carter to at least partially offset mounting criticism from blacks and labor that the President has abandoned his full-employment goals.

"Democratic congressional leaders have told Mr. Carter he has until May 31 to come up with a full-employment program of his own before they allow hearings to begin on the controversial Humphrey-Hawkins full-employment bill."

There are 97 one-syllable words. Insert that figure in the formula and compute the grade level.

$$\text{Reading grade level} = 20 - \frac{97}{10}$$
$$= 20 - 9.7$$
$$= 10.3$$

This is between the 10 and 11th grade which equates to the scores of the Flesch and Dale-Chall formulas.

As you can see from the four examples, the length of sentences and the number of syllables are the key determiners of reading grade level when you are using a formula. Theoretically then, short sentences and words should produce a low reading grade level. The four formulas just demonstrated will be used again to determine the reading grade level of the following paragraph.

"This is a plea for the use of more short words in our talk and in what we write. Through the lack of them our speech is apt to grow stale and weak, and, it may be, hold more sham than true thought. For long words at times tend to hide or blur what one says.

"What I mean is this: If we use long words too much, we are apt to talk in ruts and use the same old, worn ways of speech. This tends to make what we say dull, with no force or sting. But if we use short words, we have to say real things, things we know; and say them in a fresh way. We find it hard to hint or dodge or hide or half say things.

"For short words are bold. They say just what they mean. They do not leave you in doubt. They are clear and sharp, like signs cut in a rock."

FLESCH

Count 100 words. The 100th word is we in the middle of the second paragraph. Because we is only the third word in the sentence, back off to the word sting and use a 97-word sample.

Next, count the number of sentences. Including the colon, there are 6 sentences. This produces an average sentence length of 16. There are 97 syllables in the 97 words. Insert these figures in the formula and compute.

$$\begin{aligned}\text{Reading ease score} &= 206.835 - [1.015(16) + .846(97)] \\ &= 206.835 - [16.240 + 82.062] \\ &= 206.835 - 98.302 \\ &= 108.533\end{aligned}$$

Refer this to the table and you get less than a 5th grade reading level.

DALE-CHALL

Using 100 words, refer to the Dale List of 3000 Familiar Words. There are 10 words not on the list or 10% of the passage.

"This is a plea for the use of more short words in our talk and in what we write. Through the lack of them our speech is apt to grow stale and weak, and, it may be, hold more sham than true thought. For long words at times tend to hide or blur what one says.

"What I mean is this: If we use long words too much, we are apt to talk in ruts and use the same old, worn ways of speech. This tends to make what we say dull, with no force or sting. But if we use short words, we have to say real things, things we know; and say them in a fresh way. We find it hard to hint or dodge or hide or half say things.

"For short words are bold. They say just what they mean. They do not leave you in doubt. They are clear and sharp, like signs cut in a rock."

The mean sentence length is 16 words. Insert these figures in the formula and compute the raw score.

$$\begin{aligned}\text{Raw score} &= .1579 \times_1 + .0496 \times_2 + 3.6365 \\ &= .1579(10) + .0496(16) + 3.6365 \\ &= 1.579 + .7936 + 3.6365 \\ &= 6.009\end{aligned}$$

Refer to the correction table at the end of the Dale Word List (appendix A) and you get a reading grade level of 7 - 8th grade.

FOG INDEX

In this passage, all words have a value of one. This produces a fog count of 100.

1. Select sample passage of approximately 100 words.
2. *Assign a value of one to all one and two syllable words.
3. Assign a value of three to all remaining words.
4. Determine Fog count by adding the values.
5. Divide the Fog count by the number of sentences.
6. If the average Fog count is over 20, divide by 2 to obtain grade level.
7. If the average Fog count is under 20, subtract 2 and then divide by 2 to obtain grade level.

*For titles such as president, general, governor, admiral, etc., use a Fog value of one. The same applies to all common titles such as Maryland, California, Sacramento, Albany, etc., and for addresses and numbers.

Divide the Fog count by the number of sentences to obtain the average Fog count. 100 divided by 6 = 16.6

Because the average Fog count is under 20, subtract 2 and then divide by 2 to obtain the grade level.

16.6 - 2 = 14.6
14.6 divided by 2 = 7.3

The grade level according to the Fog index is between 7 and 8.

FORCAST

Remember that when using Forcast you must use a 150-word sample. This includes the word you in the next to the last sentence. There are 150 one-syllable words in the sample. Insert this figure in the formula and compute the reading level.

$$\text{Reading level} = 20 - \left[\frac{\text{no. of one syllable words in 150}}{10}\right]$$

$$= 20 - \frac{150}{10}$$

$$= 20 - 15$$

= 5th grade

For this passage made up of short sentences and one-syllable words, the four formulas produce a range from 4th to 8th grade reading level.

CONCLUSION

As you can see, the formulas are not infallable measures for testing reading difficulty. This is especially true of technical writing where technical words build up the Fog count because of their length.

Neither a low Fog count nor a high Flesch score guarantees clear meaning. Nor does high Fog count or low Flesch score always create reading difficulty.

The formulas should never be permitted to take the place of judgment. However, using a formula to aid in making a judgment is a more valid method of determining reading grade level than relying solely on intuition. Dismissing the use of the formulas without experimenting with them to get a feel for their applicability to your course materials is tantamount to ignoring a national problem. Everyone does not read at the same rate or at the same grade level. Your students deserve to be able to read what they are buying from you.

APPENDIX A

DALE LIST OF 3000 FAMILIAR WORDS

a
able
aboard
about
above
absent
accept
accident
account
ache (ing)
acorn
also
across
act (s)
add
address
admire
adventure
afar
afraid
after
afternoon
afterward (s)
again
against
age
aged
ago
agree
ah
ahead
aid
aim
air
airfield
airplane
airport
airship
airy
alarm
alike
alive
all
alley
alligator
allow
almost
alone
along
aloud
already
also
always
am
America
American
among
amount
an
and
angel
anger
angry
animal
another
answer
ant
any
anybody
anyhow
anyone
anything
anyway
anywhere
apart
apartment
ape
apiece
appear
apple
April
apron
are
aren't
arise
arithmetic
arm
armful
army
arose
around
arrange
arrive (d)
arrow
art
artist
as
ash (es)
aside
ask
asleep
at
ate
attack
attend
attention
August
aunt
author
auto
automobile
autumn
avenue
awake (n)
away
awful (ly)
awhile
ax
baa
babe
baby (ies)
back
background
backward (s)
bacon
bad (ly)
badge
bag
bake (r)
bakery
baking
ball
balloon
banana
band
bandage
bang
banjo
bank (er)
bar
barber
bare (ly)
barefoot
bark
barn
barrel
base
baseball
basement
basket
bat
batch
bath
bathe
bathing
bathroom
bathtub
battle
battleship
bay
be (ing)
beach
bead
beam
bean
bear
beard
beast
beat (ing)
beautiful
beautify
beauty
became
because
become
becoming
bed
bedbug
bedroom
bedspread
bedtime
bee
beech
beef
beefsteak
beehive
been
beer
beet
before
beg
began
beggar
begged
begin
beginning
begun
behave
behind
believe
bell
belong
below
belt
bench
bend
beneath
bent
berry (ies)
beside (s)
best
bet
better
between
bib
bible
bicycle
bid
big (ger)
bill
billboard
bin
bind
bird
birth
birthday
biscuit
bit
bite
biting

bitter
black
blackberry
blackbird
blackboard
blackness
blacksmith
blame
blank
blanket
blast
blaze
bleed
bless
blessing
blew
blind (s)
blindfold
block
blood
bloom
blossom
blot
blow
blue
blueberry
bluebird
bluejay
blush
board
boast
boat
bob
bobwhite
body (ies)
boil (er)
bold
bone
bonnet
boo
book
bookcase
bookkeeper
boom
boot
born
borrow
boss
both
bother
bottle
bottom
bought
bounce
bow
bowl
bow-wow
box (es)
boxcar
boxer
boy
boyhood
bracelet
brain
brake
bran
branch
brass
brave
bread
break
breakfast
breast
breath
breathe
breeze
brick
bride
bridge
bright
brightness
bring
broad
broadcast
broke (n)
brook
broom
brother
brought
brown
brush
bubble
bucket
buckle
bud
buffalo
bug
buggy
build
building
built
bulb
bull
bullet
bum
bumblebee
bump
bun
bunch
bundle
bunny
burn
burst
bury
bus
bush
bushel
business
busy
but
butcher
butt
butter
buttercup
butterfly
buttermilk
butterscotch
button
buttonhole
buy
buzz
by
bye
cab
cabbage
cabin
cabinet
cackle
cage
cake
calendar
calf
call (er)(ing)
came
camel
camp
campfire
can
canal
canary
candle
candlestick
candy
cane
cannon
cannot
canoe
can't
canyon
cap
cape
capital
captain
car
card
cardboard
care
careful
careless
carelessness
carload
carpenter
carpet
carriage
carrot
carry
cart
carve
case
cash
cashier
castle
cat
catbird
catch
catcher
caterpillar
catfish
catsup
cattle
caught
cause
cave
ceiling
cell
cellar
cent
center
cereal
certain (ly)
chain
chair
chalk
champion
chance
change
chap
charge
charm
chart
chase
chatter
cheap
cheat
check
checkers
cheek
cheer
cheese
cherry
chest
chew
chick
chicken
chief
child
childhood
children
chill (y)
chimney
chin
china
chip
chipmunk
chocolate
choice
choose
chop
chorus
chose (n)
christen
Christmas
church
churn
cigarette
circle
circus
citizen
city
clang
clap
class
classmate
classroom
claw

clay
clean (er)
clear
clerk
clever
click
cliff
climb
clip
cloak
clock
close
closet
cloth
clothes
clothing
cloud (y)
clover
clown
club
cluck
clump
coach
coal
coast
coat
cob
cobbler
cocoa
coconut
cocoon
cod
codfish
coffee
coffeepot
coin
cold
collar
college
color (ed)
colt
column
comb
come
comfort
comic
coming
company
compare
conductor

cone
connect
coo
cook (ed)
cook (ing)
cooky (ie) (s)
cool (er)
coop
cooper
copy
cord
cork
corn
corner
correct
coat
cot
cottage
cotton
couch
cough
could
couldn't
count
counter
country
county
course
court
cousin
cover
cow
coward (ly)
cowboy
cozy
crab
crack
cracker
cradle
cramps
cranberry
crank (y)
crash
crawl
crazy
cream (y)
creek
creep
crept
cried

croak
crook (ed)
crop
cross (ing)
cross-eyed
crow
crowd (ed)
crown
cruel
crumb
crumble
crush
crust
cry (ies)
cub
cuff
cup
cupboard
cupful
cure
curl (y)
curtain
curve
cushion
custard
customer
cut
cute
cutting
dab
dad
daddy
daily
dairy
daisy
dam
damager
dame
damp
dance (r)
dancing
dandy
danger (ous)
dare
dark (ness)
darling
darn
dart
dash
date

daughter
dawn
day
daybreak
daytime
dead
deaf
deal
dear
death
December
decide
deck
deed
deep
deer
defeat
defend
defense
delight
den
dentist
depend
deposit
describe
desert
deserve
desire
desk
destroy
devil
dew
diamond
did
didn't
die (d) (s)
difference
different
dig
dim
dime
dine
ding-dong
dinner
dip
direct
direction
dirt (y)
discover
dish

dislike
dismiss
ditch
dive
diver
divide
do
dock
doctor
does
doesn't
dog
doll
dollar
dolly
done
donkey
don't
door
doorbell
doorknob
doorstep
dope
dot
double
dough
dove
down
downstairs
downtown
dozen
drag
drain
drank
draw (er)
draw (ing)
dream
dress
dresser
dressmaker
drew
dried
drift
drill
drink
drip
drive (n)
driver
drop
drove

drown
drowsy
drug
drum
drunk
dry
duck
due
dug
dull
dumb
dump
during
dust(y)
duty
dwarf
dwell
dwelt
dying
each
eager
eagle
ear
early
earn
earth
east(ern)
easy
eat(en)
edge
egg
eh
eight
eighteen
eighth
eighty
either
elbow
elder
eldest
electric
electricity
elephant
eleven
elf
elm
else
elsewhere
empty
end(ing)
enemy
engine
engineer
English
enjoy
enough
enter
envelope
equal
erase(r)
errand
escape
eve
even
evening
ever
every
everybody
everyday
everyone
everything
everywhere
evil
exact
except
exchange
excited
exciting
excuse
exit
expect
explain
extra
eye
eyebrow
fable
face
facing
fact
factory
fail
faint
fair
fairy
faith
fake
fall
false
family
fan
fancy
far
faraway
fare
farmer
farm(ing)
far-off
farther
fashion
fast
fasten
fat
father
fault
favor
favorite
fear
feast
feather
February
fed
f eed
f eel
f eet
f ell
f ellow
felt
fence
fever
few
fib
fiddle
field
fife
fifteen
fifth
fifty
fig
fight
figure
file
fill
film
finally
find
fine
finger
finish
fire
firearm
firecracker
fireplace
fireworks
firing
first
fish
fisherman
fist
fit(s)
five
fix
flag
flake
flame
flap
flash
flashlight
flat
flea
flesh
flew
flies
flight
flip
flip-flop
float
flock
flood
floor
flop
flour
flow
flower(y)
flutter
fly
foam
fog
foggy
fold
folks
follow(ing)
fond
food
fool
foolish
foot
football
footprint
for
forehead
forest
forget
forgive
forgot(ten)
fork
form
fort
forth
fortune
forty
forward
fought
found
fountain
four
fourteen
fourth
fox
frame
free
freedom
freeze
freight
French
fresh
fret
Friday
fried
friend(ly)
friendship
frighten
frog
from
front
frost
frown
froze
fruit
fry
fudge
fuel
full(y)
fun
funny
fur
furniture
further
fuzzy
gain
gallon

gallop
game
gang
garage
garbage
garden
gas
gasoline
gate
gather
gave
gay
gear
geese
general
gentle
gentleman
gentlemen
geography
get
getting
giant
gift
gingerbread
girl
give (n)
giving
glad (ly)
glance
glass (es)
gleam
glide
glory
glove
glow
glue
go (ing)
goes
goal
goat
gobble
God (g)
godmother
gold (en)
goldfish
golf
gone
good (s)
good-by (bye)
good-looking
goodness
goody
goose
gooseberry
got
govern
government
gown
grab
gracious
grade
grain
grand
grandchild
grandchildren
granddaughter
grandfather
grandma
grandmother
grandpa
grandson
grandstand
grape (s)
grapefruit
grass
grasshopper
grateful
grave
gravel
graveyard
gravy
gray
graze
grease
great
green
greet
grew
grind
groan
grocery
ground
group
grove
grown
guard
guess
guest
guide
gulf
gum
gun
gunpowder
guy
ha
habit
had
hadn't
hail
hair
haircut
hairpin
half
hall
halt
ham
hammer
hand
handful
handkerchief
handle
handwriting
hang
happen
happily
happiness
happy
harbor
hard
hardly
hardship
hardware
hare
hark
harm
harness
harp
harvest
has
hasn't
haste (n)
hasty
hat
hatch
hatchet
hate
haul
have
haven't
having
hawk
hay
hayfield
haystack
he
head
headache
heal
health (y)
heap
hear (ing)
heard
heart
heat (er)
heaven
heavy
he'd
heel
height
held
hell
he'll
hello
helmet
help (er)
helpful
hem
hen
henhouse
her (s)
herd
here
here's
hero
herself
he's
hey
hickory
hid
hidden
hide
high
highway
hill
hillside
hilltop
hilly
him
himself
hind
hint
hip
hire
his
hiss
history
hit
hitch
hive
ho
hoe
hog
hold (er)
hole
holiday
hollow
holy
home
homely
homesick
honest
honey
honeybee
honeymoon
honk
honor
hood
hoof
hook
hoop
hop
hope (ful)
hopeless
horn
horse
horseback
horseshoe
hose
hospital
host
hot
hotel
hound
hour
house
housetop
housewife
housework
how
however

howl
hug
huge
hum
humble
hump
hundred
hung
hunger
hungry
hunk
hunt (er)
hurrah
hurried
hurry
hurt
husband
hush
hut
hymn
I
ice
icy
I'd
idea
ideal
if
ill
I'll
I'm
important
impossible
improve
in
inch (es)
income
indeed
Indian
indoors
ink
inn
insect
inside
instant
instead
insult
intend
interested
interesting
into
invite
iron
is
island
isn't
it
its
it's
itself
I've
ivory
ivy
jacket
jacks
jail
jam
January
jar
jaw
jelly
jay
jellyfish
jerk
jig
job
jockery
join
joke
joking
jolly
journey
joy (ful)
joyous
judge
jug
juice
juicy
July
jump
June
junior
junk
just
keen
keep
kept
kettle
key
kick
kid
kill (ed)
kind (ly)
kindness
king
kingdom
kiss
kitchen
kite
kitten
kitty
knee
kneel
knew
knife
knit
knives
knob
knock
knot
know
known
lace
lad
ladder
ladies
lady
laid
lake
lamb
lame
lamp
land
lane
language
lantern
lap
lard
large
lash
lass
last
late
laugh
laundry
law
lawn
lawyer
lay
lazy
lead
leader
leaf
leak
lean
leap
learn (ed)
least
leather
leave (ing)
led
left
leg
lemon
lemonade
lend
length
less
lesson
let
let's
letter
letting
lettuce
level
liberty
library
lice
lick
lid
lie
life
lift
light (ness)
lightning
like
likely
liking
lily
limb
lime
limp
line
linen
lion
lip
list
listen
lit
little
live (s)
lively
liver
living
lizard
load
loaf
loan
loaves
lock
locomotive
log
lone
lonely
lonesome
long
look
lookout
loop
loose
lord
lose (r)
loss
lost
lot
loud
love
lovely
lover
low
luck (y)
lumber
lump
lunch
lying
ma
machine
machinery
mad
made
magazine
magic
maid
mail
mailbox
mailman
major
make
making
male
mama

man
manager
mane
manger
many
map
maple
marble
march (M)
mare
mark
market
marriage
married
marry
mask
mast
master
mat
match
matter
mattress
may (M)
maybe
mayor
maypole
me
meadow
meal
mean (s)
meant
measure
meat
medicine
meet (ing)
melt
member
men
mend
meow
merry
mess
message
met
metal
mew
mice
middle
midnight
might (y)
mile
milk
milkman
mill
miller
million
mind
mine
miner
mint
minute
mirror
mischief
miss (M)
misspell
mistake
misty
mitt
mitten
mix
moment
Monday
money
monkey
month
moo
moon
moonlight
moose
mop
more
morning
morrow
moss
most (ly)
mother
motor
mount
mountain
mouse
mouth
move
movie
movies
moving
mow
Mr., Mrs.
much
mud
muddy
mug
mule
multiply
murder
music
must
my
myself
nail
name
nap
napkin
narrow
nasty
naughty
navy
near
nearby
nearly
neat
neck
necktie
need
needle
needn't
Negro
neighbor
neighborhood
neither
nerve
nest
net
never
nevermore
new
news
newspaper
next
nibble
nice
nickel
night
nightgown
nine
nineteen
ninety
no
nobody
nod
noise
noisy
none
noon
nor
north (ern)
nose
not
note
nothing
notice
November
now
nowhere
number
nurse
nut
oak
oar
oatmeal
oats
obey
ocean
o'clock
October
odd
of
off
offer
office
officer
often
oh
oil
old
old-fashioned
on
once
one
onion
only
onward
open
or
orange
orchard
order
ore
organ
other
otherwise
ouch
ought
our (s)
ourselves
out
outdoors
outfit
outlaw
outline
outside
outward
oven
over
overalls
overcoat
overeat
overhead
overhear
overnight
overturn
owe
owing
own (er)
ox
pa
pace
pack
package
pad
page
paid
pail
pail (ful)
paint (er)
painting
pair
pal
palace
pale
pan
pancake
pane
pansy
pants
papa
paper
parade
pardon
parent
park

part (ly)
partner
party
pass
passenger
past
paste
pasture
pat
patch
path
patter
pave
pavement
paw
pay
payment
pea (s)
peace (ful)
peach (es)
peak
peanut
pear
pearl
peck
peek
peel
peep
peg
pen
pencil
penny
people
pepper
peppermint
perfume
perhaps
person
pet
phone
piano
pick
pickle
picnic
picture
pie
piece
pig
pigeon
piggy
pile
pill
pillow
pin
pine
pineapple
pink
pint
pipe
pistol
pit
pitch
pitcher
pity
place
plain
plan
plane
plant
plate
platform
platter
play (er)
playground
playhouse
playmate
plaything
pleasant
please
pleasure
plenty
plow
plug
plum
pocket
pocketbook
poem
point
poison
poke
pole
police
policeman
polish
polite
pond
ponies
pony
pool
poor
pop
popcorn
popped
porch
pork
possible
post
postage
postman
pot
potato (es)
pound
pour
powder
power (ful)
praise
pray
prayer
prepare
present
pretty
price
prick
prince
princess
print
prison
prize
promise
proper
protect
prou d
prove
prune
public
puddle
puff
pull
pump
pumpkin
punch
punish
pup
pupil
puppy
pure
purpose
purse
push
puss
pussy
pussycat
put
putting
puzzle
quack
quart
quarter
queen
queer
question
quick (ly)
quiet
quilt
quit
quite
rabbit
race
rack
radio
radish
rag
rail
railroad
railway
rain (y)
rainbow
raise
raisin
rake
ram
ran
ranch
rang
rap
rapidly
rat
rate
rather
rattle
raw
ray
reach
read
reader
reading
ready
real
really
reap
rear
reason
rebuild
receive
recess
record
red
redbird
redbreast
refuse
reindeer
rejoice
remain
remember
remind
remove
rent
repair
repay
repeat
report
rest
return
review
reward
rib
ribbon
rice
rich
rid
riddle
ride (r)
riding
right
rim
ring
rip
ripe
rise
rising
river
road
roadside
roar
roast
rob
robber
robe
robin
rock (y)

rocket
rode
roll
roller
roof
room
rooster
root
rope
rose
rosebud
rot
rotten
rough
round
route
row
rowboat
royal
rub
rubbed
rubber
rubbish
rug
rule (r)
rumble
run
rung
runner
running
rush
rust (y)
rye
sack
sad
saddle
sadness
safe
safety
said
sail
sailboat
sailor
saint
salad
sale
salt
same
sand (y)
sandwich

sang
sank
sap
sash
sat
satin
satisfactory
Saturday
sausage
savage
save
savings
saw
say
scab
scales
scare
scarf
school
schoolboy
schoolhouse
schoolmaster
schoolroom
scorch
score
scrap
scrape
scratch
scream
screen
screw
scrub
sea
seal
search
season
seat
second
secret
see (ing)
seed
seek
seem
seen
seesaw
select
self
selfish
sell
send

sense
sent
sentence
separate
September
servant
serve
service
set
setting
settle
settlement
seven
seventeen
seventh
seventy
several
sew
shade
shadow
shady
shake (r)
shaking
shall
shame
shan't
shape
share
sharp
shave
she
she'd
she'll
she's
shear (s)
shed
sheep
sheet
shelf
shell
shepherd
shine
shining
shiny
ship
shirt
shock
shoe
shoemaker
shone

shock
shoot
shop
shopping
shore
short
shot
should
shoulder
shouldn't
shout
shovel
show
shower
shut
shy
sick (ness)
side
sidewalk
sideways
sigh
sight
sign
silence
silent
silk
sill
silly
silver
simple
sin
since
sing
singer
single
sink
sip
sir
sis
sissy
sister
sit
sitting
six
sixteen
sixth
sixty
size
skate
skater

ski
skin
skip
skirt
sky
slam
slap
slate
slave
sled
sleep (y)
sleeve
slid
sleight
slept
slice
slide
sling
slip
slipped
slipper
slippery
slit
slow (ly)
sly
smack
small
smart
smell
smile
smoke
smooth
snail
snake
snap
snapping
sneeze
snow (y)
snowball
snowflake
snuff
snug
so
soak
soap
sob
socks
sod
soda
sofa

soft
soil
sold
soldier
sole
some
somebody
somehow
someone
something
sometime(s)
somewhere
son
song
soon
sore
sorrow
sorry
sort
soul
sound
soup
sour
south(ern)
space
spade
spank
sparrow
speak(er)
spear
speech
speed
spell(ing)
spend
spent
spider
spike
spill
spin
spinach
spirit
spit
splash
spoil
spoke
spook
spoon
sport
spot
spread
spring
springtime
sprinkle
square
squash
squeak
squeeze
squirrel
stable
stack
stage
stair
stall
stamp
stand
star
stare
start
starve
state
station
stay
steak
steal
steam
steamboat
steamer
steel
steep
steeple
steer
stem
step
stepping
stick(y)
stiff
still(ness)
sting
stir
stitch
stock
stocking
stole
stone
stood
stool
stoop
stop
stopped
stopping
store
stork
stories
storm(y)
story
stove
straight
strange(r)
strap
straw
strawberry
steam
street
stretch
string
strip
stripes
strong
stuck
study
stuff
stump
stung
subject
such
suck
sudden
suffer
sugar
suit
sum
summer
sun
Sunday
sunflower
sung
sunk
sunlight
sunny
sunrise
sunset
sunshine
supper
suppose
sure(ly)
surface
surprise
swallow
swim
swamp
swan
swat
swear
sweet
sweater
sweep
sweet(ness)
sweetheart
swell
swept
swift
swim
swimming
swing
switch
sword
swore
table
tablecloth
tablespoon
tablet
tack
tag
tail
tailor
take(n)
taking
tale
talk(er)
tall
tame
tan
tank
tap
tape
tar
tardy
task
taste
taught
tax
tea
teach(er)
team
tear
tease
teaspoon
tell
teeth
telephone
temper
ten
tennis
tent
term
terrible
test
than
thank(s)
thankful
Thanksgiving
that
that's
the
theater
thee
their
them
then
there
these
they
they'd
they'll
they're
they've
thick
thief
thimble
thin
thing
think
third
thirsty
thirteen
thirty
this
tho
thorn
those
though
thousand
thought
thread
three
threw
throat
throne
through
throw(n)

thumb
thunder
Thursday
thy
tick
ticket
tickle
tie
tiger
tight
till
time
tin
tinkle
tiny
tip
tiptoe
tire
tired
'tis
title
to
toadstool
toad
toast
tobacco
today
toe
together
toilet
told
tomato
tomorrow
ton
tone
tongue
tonight
too
took
tool
toot
tooth
toothbrush
toothpick
top
tore
torn
toss
touch
tow
toward(s)
towel
tower
town
toy
trace
track
trade
train
tramp
trap
tray
treasure
treat
tree
trick
tricycle
tried
trim
trip
trolley
trouble
truck
true
truly
trunk
trust
truth
try
tub
Tuesday
tug
tulip
tumble
tune
tunnel
turkey
turn
turtle
twelve
twenty
twice
twig
twin
two
ugly
umbrella
uncle
under
understand
underwear
undress
unfair
unfinished
unfold
unfriendly
unhappy
unhurt
uniform
United States
unkind
unknown
unless
unpleasant
until
unwilling
up
upon
upper
upset
upside
upstairs
uptown
upward
us
use(d)
useful
valentine
valley
valuable
value
vase
vegetable
velvet
very
vessel
victory
view
village
vine
violet
visit
visitor
voice
vote
wag
wagon
waist
wait
wake(n)
walk
wall
walnut
want
war
warm
warn
was
wash(er)
washtub
wasn't
waste
watch
watchman
water
watermelon
waterproof
wave
wax
way
wayside
we
weak(ness)
weaken
wealth
weapon
wear
weary
weather
weaver
web
we'd
wedding
Wednesday
wee
weed
week
we'll
weep
weigh
welcome
well
went
were
we're
west(ern)
wet
we've
whale
what
what's
wheat
wheel
when
whenever
where
which
while
whip
whipped
whirl
whisky
whisper
whistle
white
who
who'd
whole
who'll
whom
who's
whose
why
wicked
wide
wife
wiggle
wild
wildcat
will
willing
willow
win
wind(y)
windmill
window
wine
wing
wink
winner
winter
wipe
wire
wise
wish
wit
witch
with
without
woke

wolf
woman
women
won
wonder
wonderful
won't
wood(en)
woodpecker
woods
wool
woolen
word
wore
work(er)
workman
world
worm
worn
worry
worse
worst
worth
would
wouldn't
wound
wove
wrap
wrapped
wreck
wren
wring
write
writing
written
wrong
wrote
wrung
yard
yarn
year
yell
yellow
yes
yesterday
yet
yolk
yonder
you
you'd
you'll
young
youngster
your(s)
you're
yourself
yourselves
youth
you've

(Correction Table on page 126)

CORRECTION TABLE

Formula Raw Score	Corrected Grade-Levels
4.9 and below	4th grade and below
5.0 to 5.9	5-6th grade
6.0 to 6.9	7-8th grade
7.0 to 7.9	9-10th grade
8.0 to 8.9	11-12th grade
9.0 to 9.9	13-15th grade (college)
10.0 and above	16 - (college graduate)

eight

Writing Examinations

John T. Loftus

Introduction to Article

Recent studies on home study course completion rates have pointed to the critical importance of challenging examination items. Most home study courses make heavy use of objective, multiple choice examination items for evaluating student achievement.

Mr. Loftus, a believer in the theory that exams should "teach as well as test," explains why multiple choice items are a home study educator's best measurement tool. He tells how -- by means of practical examples -- you can prepare better examinations for courses. The more challenging (and fair) the exam, the more motivated the learner becomes. Higher completion rates follow.

Writing Examinations

John T. Loftus

PURPOSE OF THIS ARTICLE

The ultimate objective of preparing a home study course is to have the student learn. Much has been written about the learning process and still little is known about how a person learns. This article will not deal with the process of learning, rather it will cover the basics of measuring whether learning has in fact taken place.

The best possible way of making this determination is through an examination that teaches as well as tests. Preparing a good home study examination is the most demanding of any educational writer's skills. Consequently, the purpose of this article is to explore the various types of examinations which can be used, and then to offer some practical suggestions and examples on how you can prepare better examination items . . . and up your course completion rate!

KINDS OF EXAMINATIONS

Most modern home study courses use one or more of three basic types of examination items: objective, essay, and performance. Of the three types, the most commonly used today is the objective examination. For home study courses, objective examinations have proved over the years to be the most reliable, valid, and easy to administer form of student evaluation. Conversely, objective examinations are perhaps the most difficult, expensive and time consuming to prepare. Objective questions,

generally speaking, are classified into four major types: (1) multiple-choice, (2) matching, (3) completion or fill-in, and (4) true-false. Of the four objective types, the most commonly used is the multiple-choice item. It is perhaps the single most reliable and valid item. Consequently, this article will emphasize objective, multiple-choice examinations.

The second most commonly used examination in correspondence education is the essay examination, and, of course, the least used is the performance examination. Please note the use of the term "used" rather than "preferred." The performance examination in skills training is the most desired, but because the instructor and student are physically removed, it is the least used. However, there are types of training in correspondence education where performance examinations can be used. This will be discussed later. True-false questions, frankly, are unreliable and used mainly for self-check quizzes or to break up long, monotonous multiple choice exams.

ESSAY QUESTIONS VS. OBJECTIVE QUESTIONS

There are no categorical rules to tell you which type of questions or tests to use. However, it will be helpful to keep clearly in mind the characteristics of each type. Then you will be able to decide which is the most suitable for the particular purpose and circumstances of the test you are making.

1. Abilities Measured

   a. Essay questions require the student to express himself in his own words, using information from his own background and knowledge. They can tap high levels of reasoning, but they do not measure purely factual information effectively.

   b. Objective questions require the student to select answers from options which are given or to supply an answer of one word or a phrase. They can also measure high levels of reasoning just as efficiently as essay questions, and they do measure knowledge of facts effectively.

2. Scope

a. Essay questions cover only a limited field of knowledge in any one test, primarily because of the time they take the student to complete. Also, the student who is fluent can often avoid discussing points of which he is unsure.

b. Objective questions cover a broad field of knowledge in any one test, because many more questions can be answered in the same time frame as an essay test. This broader coverage helps to provide a more realiable measurement of learning.

3. Ease of Preparation

a. Essay tests require writing only a few questions. The questions must be well conceived in that tasks must be clearly defined; general enough to offer some leeway, yet specific enough to set limits.

b. Objective tests require writing many questions. They too must be well conceived. Much more will be said about this later in the article.

4. Scoring

a. Essay questions are usually time consuming to score, and one answer may be scored differently by different instructors or by the same instructor at different times. These items lack what experts call reliability, since a student's score may hinge on the prejudices or penchants of the instructor grading the essay response.

b. Objective questions can be scored quickly, accurately and consistently. They possess a high degree of validity and reliability.

WRITING MULTIPLE-CHOICE QUESTIONS

Much of this section of the article was taken from "A Guide to Writing Multiple-Choice Examinations," published by Intext, Inc. in 1969. Your author was one of the original writers of the Intext Guide.

1. Multiple-Choice Items -- It has been found that well-constructed objective questions can test almost any subject. The preferred form of the objective question is the multiple-choice item. The reason is that a multiple-choice item can measure most of the important educational results, including knowledge, understanding, and judgment. Almost any ability or understanding which can be measured by another form of examination item, whether objective or subjective -- and whether completion, short-answer, true-false, or essay -- can be measured by a multiple-choice item.

   A multiple-choice item, furthermore, is less vulnerable to chance errors from student guessing than are other forms of objective items, such as matching or true-false. Thus a multiple-choice item is statistically superior to a subjective item in measuring educational achievement.

   An important point to be made is that many of the principles set down here apply equally well both to other types of objective questions and to essay questions.

2. Testing Only the Important Topics -- Before committing even a single multiple-choice item to the examination paper, you must decide which topics are the important ones to be tested. Far too often the examination writer seizes upon the textbook and proceeds to write without reflection. The resulting series of items makes a motley procession down the examination page. This mixed bag of important and trivial topics, largely trivial, wastes the writer's talent and the student's time.

   Therefore you should carefully select only the important topics of the text and supplementary notes to be tested, discarding the trivial. And not only should

you select important topics, you should also decide which aspects of those topics are the most desirable to emphasize in the examination items.

Furthermore, you should define in your own mind the purpose of the examination as specifically as possible. Don't be vague or ambiguous about what the examination is supposed to do. Rather, be clear and positive as to what you may reasonably expect your examination to measure, and as to what you should not expect it to measure. Thus you will lay the groundwork for the construction of an examination that is, at the very least, valid.

3. Terms -- Before we discuss the guidelines for writing multiple-choice items, let us consider several important terms we'll encounter: stem, option, key, distracter, and item.

A multiple-choice stem is an introductory question or an incomplete statement for which the student chooses a response or a completion from two or more options.

An option is a response to the stem in a multiple-choice item. Each stem requires two or more options, or responses; four is a common, workable number of options (responses).

The key is the one correct response (the one correct option) to a multiple-choice stem.

A distracter is any incorrect response (incorrect option) to a stem.

An item consists of the stem and all its options, or responses.

4. How to Write Multiple-Choice Items

a. Make sure that the multiple-choice item does not parrot the wording of the text. The student should be discouraged from relying on word memory alone. The student should grasp the

principle being tested, and not merely recognize a familiar word or phrase from the text.

b. Use, in your multiple-choice items, simple, unambiguous words. Avoid verbal "tricks" and words that are too colorful. The purpose of any item is to find out what the student knows, not to mislead him into making a wrong choice.

(Correct responses in the examples below are indicated with a check mark).

Here is an item containing a verbal trick:

It was Julius Caesar who uttered the famous line

A. "All Gaul is divided into four parts."
B. "After me, the deluge."
C. "Give me liberty or give me death."
D. None of these. ✓

In this item the slight misquotation of Caesar's "All Gaul is divided into three parts" is designed to trick and confuse even the most knowledgeable student. Avoid such an item.

c. Be precise in working an item.

An example of imprecision:

The worst winters occur in

A. Chicago. ✓
B. New Orleans.
C. Geneva.
D. Sydney.

This item lacks precision in that the adjective "worst" can mean "coldest, "dampest," "longest," or even "most boring"; the precise meaning is not clear.

d. A particular item should not interlock with a previous item or a later item, thus providing a clue to the correct response. If, for example, one item asks the student to identify the nation which fought against the United States in the War of 1812, another item should not refer to England as one of the warring parties.

e. Avoid an incomplete or a too-general stem that necessitates unrelated options:

From your study of this economics text you have learned that

A. monopolies are forbidden by law.
B. communism is superior to all other economic systems.
C. demand interacts with supply. ✓
D. Egypt is highly industrialized.

f. A worthwhile variation on the typical item is the situation or problem item. The situation item consists of a narrative or descriptive passage or illustration upon which two or more items are based. For example:

Note to student: Read the following passage before answering questions 46 and 47.

The constitution of each state sets up the qualifications for voting, and qualified voters elect the members of both houses of the legislature. In some states any citizen qualified to vote is also qualified to be a legislator. In other states there are age and residence requirements. When there are age requirements, senators are usually required to be three or five years older than representatives. Some states set a minimum age: most state legislators are in their forties or fifties.

In almost all states, legislators are nominated by direct primaries and elected at the general

election by even-numbered years. In two-thirds of the states, senators serve for four years, and in one-third, for two. Forty-five states have two-year terms for the House of Representatives. Longer terms are an easy change which can improve legislatures. Since many legislatures meet for only two or three months in the course of two years, a new legislator has little opportunity in his two years to learn his job before standing for reelection.

46. According to the preceding passage, most state representatives serve a term of

A. one year.
B. two years. ✓
C. four years.
D. six years.

47. According to the passage, the length of the representative's term should be

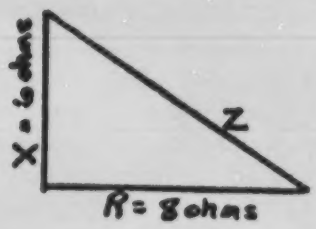
A. shorter, because each representative's private career is important, too.
B. shorter, because representatives waste too much time in their meetings.
C. longer because representatives are now beset by the cost of too-frequent re-election campaigns.
D. longer, because each representative needs more time to become familiar with his job. ✓

In like manner a series of items may be based on a table, an illustration, a mathematical problem, or a complex formula, to enable the student to demonstrate his full understanding of its various aspects.

An example based on an illustration:

Note: Look at Fig. I and answer questions 48 and 49.

FIGURE I



48. The diagram in Fig. I represents

A. a current-phasor triangle.
B. an impedance triangle. ✓
C. a susceptance triangle.
D. a voltage-phasor triangle.

49. With the information taken from Fig. I it can be determined that the value of Z is

A. 2.25 ohms.
B. 5.29 ohms.
C. 10 ohms. ✓
D. 14 ohms.

g. Avoid any item which can be answered solely by general intelligence, without any knowledge of the text material:

Which one of the following animals is the largest?

A. squirrel.
B. monkey.
C. horse.
D. elephant. ✓

h. Descent to the trivial is a tempting escape route for the item writer who fears that there are not enough important topics for the ideal number of good multiple-choice items. So he turns to less important, or even trivial, topics to "pad out" the examination. At such a time it is better to

use other approaches, such as combinations of essay and multiple-choice items to cover the important topics only, which will reduce the otherwise desirable number of items.

i. Although triviality is taboo, repetition to reinforce the student's learning is useful. If a text topic is worth one item, it may be worth two or three items covering different aspects of the topic and reinforcing the student's understanding through varied repetition. The only limit to this approach is the importance of the topic and the item writer's skill and imagination.

j. The stem of a multiple-choice item should state or clearly imply the question. That is, you should supply enough information in the stem of your item to let the student know exactly what you expect of him. For example, it is not enough to say:

Christopher Columbus

A. discovered America in the year 1492.
B. etc.

Rather, you should say:

Christopher Columbus discovered America in the year

A. 1492.
B. etc.

Or you can write the stem as a question:

When did Christopher Columbus discover America?

A. 1492.
B. etc.

k. Try to avoid the word "not" in the stem. Its use tends to confuse the student.

l. Avoid unnecessary words or sentences in the stem:

Heat transfer is an interesting phenomenon for scientists, because it affects the daily lives of many people. A typical instrument for measuring heat transfer is the . . .

The entire first sentence can be omitted from the stem because it is "window dressing" and contributes nothing to the point of the question.

m. Closely allied to guideline (l.) is the need to avoid superfluous words like "currently" and "located." These words are common, but usually they serve no purpose. You should not say, for instance, "The temperature is currently 50 degrees Fahrenheit" or "The current temperature is 50 degrees Fahrenheit." "Current" and "currently" are unnecessary; they add nothing. It's enough to say, "The temperature is 50 degrees Fahrenheit."

Another superfluous word, frequently used, is "located," as in "Our office is located at Oak and Pawnee." It's enough to say, "Our office is at Oak and Pawnee."

n. An overweighted stem, also to be avoided, is somewhat like the tail wagging the dog. Too much is given in the stem and too little in the responses.

Here is an example of an overweighted stem:

The game is which two opposing teams of eleven men each attempt to score a touchdown by crossing their opponent's goal line, carrying an inflated leather ball, is called

A. baseball.
B. tennis.
C. hockey.
D. football. ✓

A better question can be formulated than the preceding one, with its elaborate "stage setting" for eliciting a one-word answer.

Often, in fact, the unskilled item writer composes items which contain extremely short responses. This practice limits, unnecessarily, the importance and extent of the measurable knowledge and achievement. You don't have to avoid short or one-word responses altogether, but you should not allow such responses to become a large part of an examination.

Instead of working for short responses, or options, use your creative flair to "dress up" the options with imaginative adjectives and modifiers. This will make the options more interesting and the distracters more plausible.

o. All of the options, or choices, in a multiple-choice item should be parallel both in grammar and point of view.

The careless writer might say, for example:

Students of the American Revolution remember Patrick Henry best for his

A. speaking and debates. ✓
B. horses and hunting.
C. acting and plays.
D. swordsmanship and wrestling.

It is better to say:

Students of the American Revolution remember Patrick Henry best for this

A. speaking and debating. ✔
B. riding and hunting.
C. acting and playwriting.
D. fencing and wrestling.

p. Avoid overuse of the phrase "None of these" as an option. This phrase should be used as the correct answer only when no other good answer can be supplied, or as a distracter when a good intended answer is supplied. Do not use "None of these" as a crutch. Instead, make a serious try at rewording or replacing the question or the option to avoid abuse of this phrase.

q. Avoid giving clues in either the stem or the options that may lead the student to the correct answer:

What were the chief causes of the American Civil War?

A. famine in the South.
B. slavery and states' rights. ✔
C. the opening of the Erie Canal.
D. interference by England.

Here the stem calls for a plural answer, while only one of the options includes a plural. This gives a direct clue to the correct answer and automatically rules out the other three options.

r. For consistency, supply the same number of options in each item of an examination.

s. A common error is unnecessary repetition in the options:

The movie Camelot paints a colorful picture of

A. the court of King Tut, the young Pharaoh.
B. the court of King Wenceslaus of the Christmas carol.
C. the court of King Arthur and his knights. ✔

D. the court of King Louise Phillipe, the restorer of Versailles.

The remedy here is to put the first three words of each option into the stem, with this result:

The movie Camelot paints a colorful picture of the court of

A. King Tut, the young Pharaoh.
B. etc.

t. Distracters should not be inappropriate or ridiculous:

Many books have been written about the fifteenth-century French heroine-martyr

A. Joan of Arc ✓
B. Simone de Beauvoir
C. Marie Antoinette
D. Joan Crawford

The fourth distracter is obviously inappropriate, in contrast to the second and third, which seem plausible.

u. On the other hand, a distracter may be at least partly true (and still incorrect), as witness the example in guideline (t.). One of the distracters, "Marie Antoinette," was a sort of French heroine-martyr, but of the eighteenth century.

v. An item that involves numbers or quantities should list the responses in a numerical progression.

Note this violation of numerical progression:

The 1960 census revealed that the population of New York City had reached almost

A. 5 million.

B. 3 million.
C. 8 million. ✓
D. 10 million.

Responses A and B should be reversed in keeping with numerical progression.

w. Avoid options which contain the word "always" or "never" or similar words. These words are "specific determiners" and tip off the student, since a statement containing such a word is usually false.

x. Try to keep all options about the same length. A student quickly spots a response that differs significantly in length from the others. The extra length generally signals more careful formulation by the writer, and therefore reveals itself as the key.

y. Be wary of using two opposites as options, when one of the opposites is the key. A student who guesses will very likely ignore the other options and concentrate on the opposites, thus increasing, unfairly, his chances of selecting the correct answer.

For example:

Toward the end of Napoleon's Russian campaign, the weather which the French troops experienced consisted of

A. an extremely rainy spring.
B. an abnormally hot, dry summer.
C. a very severe winter. ✓
D. an unseasonably mild winter.

To improve this item, you have at least two remedies. You may, for instance, replace C with D and change D to "none of these," making D the key. Thus the options would read:

A. an extremely rainy spring.
B. an abnormally hot, dry summer.
C. an unseasonably mild winter.
D. none of these. ✓

Or you may elect to form another pair of opposites of A and B by changing the word "spring" to "summer":

A. an extremely rainy summer.
B. an abnormally hot, dry summer.
C. a very severe winter. ✓
D. an unseasonably mild winter.

z. The key may be the best (most appropriate) answer, or it may be the only absolutely correct answer.

If the key is the best answer from among varyingly appropriate options, the student must exercise judgment. Consequently the best answer must be a defensible one. It must be demonstrably superior to the less appropriate distracters in the eyes of the knowledgeable student.

On the other hand, if the key is the only absolutely correct answer, the distracters must be incorrect, though plausible. They may not be merely less appropriate.

aa. When the key is an absolutely correct answer, make the distracters (incorrect options) completely wrong, but still plausible:

The long-run musical comedy "Fiddler on the Roof" revolves around a

A. crotchety Roman emperor.
B. young American penthouse dweller.
C. lovable Jewish folk character. ✓
D. struggling French concert violinist.

bb. In treating of figures or formulas, particularly in mathematics, make each distracter meaningful and not merely plausible sounding. That is, each incorrect option should, if possible, represent a common, natural error on the student's part. For example:

If one revolution of the watthour-meter rotor represents 1.5 watthours, what will 300 rotor revolutions represent?

A. 0.2 kwhr
B. 0.45 kwhr ✓
C. 200 kwhr
D. 450 kwhr

In the example the three distracters resulted from errors students make by calculating incorrectly or by failing to complete all the steps required by the formula.

Here are the options with the solutions from which they were derived (the student, of course, is not required to show solutions on his examination paper):

A. 0.2 kwhr (300 divided by 1.5 = 200; 200 divided by 1000 = 0.2)
B. 0.45 kwhr (1.5 x 300 = 450; 450 divided by 1000 = 0.45) ✓
C. 200 kwhr (300 divided by 1.5 = 200)
D. 450 kwhr (1.5 x 300 = 450)

HOW TO IMPROVE RELIABILITY IN SCORING ESSAY QUESTIONS

First, the question should be stated in sufficient detail so that the student understands what is expected. Otherwise, many of them will discuss quite different aspects of a question and their answers will vary greatly in length, points covered, and general approach. Under these conditions, the instructor will find it difficult to compare the quality of the various answers and assign grades accurately and consistently.

An example of a poorly worded essay question which is too general follows:

Describe the battle of Gettysburg during the American Civil War.

When the student answers this question, he is free to cover any aspect of that battle that he either knows well or thinks is important. The question would be better if worded as follows:

> During the battle of Gettysburg, military mistakes were made by both sides. Popular opinion is that the battle was influenced by the Union forces capitalizing on the mistakes of the Confederates.
>
> Briefly describe the military mistakes that were made by both sides in the battle. Explain whether you think these mistakes helped the Union forces win the battle or not and why you have drawn that conclusion. Your essay should be no longer than 500 words (3 or 4 pages in longhand).

In preparing this question, the writer should have analyzed the points he thought should be made in the ideal answer. To help in the scoring, each point can be numerically weighted as regards its importance to the overall answer. The instructor may also wish to allow credit for clear organization of thinking. Next, the instructor should develop a scoring "key" until he reads a cross-section of students' answers. If the answers are reasonably consistent and produce a reasonable spread of low to high grades, the question can be judged as sound and the instructor's "key" modified, if necessary. Otherwise, the instructor should re-examine the question. By doing all of these things, the instructor increases objectivity in scoring essay questions.

PERFORMANCE EXAMINATIONS

A performance test, simply stated, is one in which a student is required to perform or accomplish a task. A task here is defined as an act or series of acts performed by an individual in order to produce a product or achieve a specified result. In order to adequately test performance, conditions and standards for the test must be established. Conditions describe the necessary equipment and the physical setting under which the student is required to accomplish a specific task. The

standard is a statement of how well the task must be performed.

The U.S. Army has done much work in performance testing, and we quote from Circular No. 351-2, United States Army Training and Doctrine Command, to more adequately define a task standard: "The standard specifies how well, completely, or accurately a process must be performed or a product produced. The standard reflects task requirements on the job. If a product standard, it is in terms of accuracy, tolerance, completeness, format, clarity, errors, or quantity. If a process standard, it is in terms of sequence, if critical, completeness, accuracy, and speed. Both product and process must be measurable."

Perhaps some will ask, how can we do this with students who are geographically removed? For those correspondence educators who use performance testing, obviously the answer is easy. For those who don't, here are some examples:

1. The school teaching photography, where the student is required to take photographs and submit them to the school for evaluation.

2. The locksmithing school which required students to make keys to specifications which can in turn open a lock.

3. The electronics school which makes the student use instruments to measure a process, take readings from the instruments and submit the answers to the school.

4. The upholstery school which requires a student to make a cushion and send it to the school for evaluation.

These are real examples and in every case, the conditions and standards were established by the school in order that the instructor could more objectively assess the student's performance. If you are not using performance tests now, it would be wise to examine your course(s) for areas where performance should be measured.

SOME SUGGESTIONS ON STATISTICAL ANALYSIS

For some the very word "statistics" brings on a state of shock. The fact is that practical statistics can be quite simple. As a minimum,

correspondence educators should use item analysis to measure the effectiveness of a question. Item analysis will tell you two things that you should know about your question: (1) how difficult each question is; (2) how well each question discriminates between high and low ranking students as a whole.

A simple measurement of difficulty is the percent of students who get the question right. If you just want your test to measure whether your students have mastered a fundamental unit of study, questions should tend to be easy. In other words, a greater percentage should answer the question correctly. However, if the purpose of the test is to rank all the students in order of ability, try to use questions which are of average difficulty (only 50% of the students answer correctly).

Discrimination is measuring how effectively each question contributes to the discrimination between high scoring and low scoring students. Discrimination may be estimated as follows:

1. Arrange the tests in order of scores, with the highest score on top.

2. Take a specified number (say ten) from the tests on top and the same quantity from the bottom. Place them in separate piles called High and Low.

3. Now take each question and count the number of Highs who got it right and the number of Lows who got it right.

4. Convert these numbers to percent. If the question is a good one for ranking students, then substantially more of the Highs than the Lows will answer it correctly.

After this estimate you will want to carefully evaluate those questions where top students had as much difficulty as the poorer students -- or worse -- more. Perhaps the question is not clearly stated, or in the case of a multiple-choice item, perhaps one of the wrong options is too close to being correct. Wherever your analysis indicates a possible flaw in the question, try to rewrite the question.

CONCLUSION

By now you should be very much aware that writing examinations is difficult and timeconsuming if the result is to be well-reasoned, carefully written items. With practice and experience, including feedback from students, will come skill in writing the kind of items which test standards demand.

The greater challenge offered the student and the heightening of his learning experience will prove more than ample rewards for your conscientious efforts.

STOCK MARKET INSTITUTE INC

APPENDIX A

Section 22 Exam

These are open-book exams. Refer to your lessons and charts if you need help.

Name_____ Date _____
(Print or Type)

Address_____ Student No._____

City_____ State_____ Zip_____

The Wyckoff Wave

Complete all items. Check your work. Then mail the exam to the Institute.

Part I: For test items 1-20 use the following Table of Data and Intra-Day Wave Chart which show the actual market action for Thursday, January 16, 1969. For Waves 5-9, fill in the missing data in the blanks of the Table of Data. Next, use the data in the Table of Data to complete the chart for waves 10-13. (Estimate these as closely as possible.)

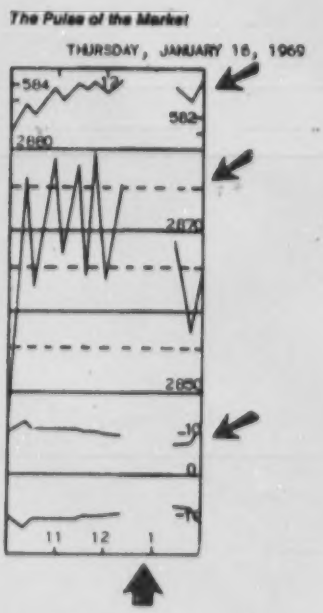
FILL IN MISSING DATA

Fold

WAVE	TIME	DUR	PRICE	CHN	VOL	O-P	ACT
OPENING			286[illegible]				
1.	10:20	20	2876	+29	1620	582.74	13
2.	10:30	10	2863	-13	630	582.11	L 11
3.	10:55	25	2878	+15	1670	583.78	11
4.	11:05	10	2867	-11	690	583.09	11
5.	11:25	—	———	+10	980	584.07	11
6.	11:35	—	2864	—	350	583.72	—
7.	11:45	10	———	H +15	490	———	10
8.	12:00	—	———	-15	670	583.54	10
9.	12:20	20	2875	———	810	584.35	—
10.	12:50	30	2858	-17	1280	583.07	8
11.	1:05	15	2869	+11	840	583.91	8
12.	1:15	10	2859	-10	420	583.49	7
13.	1:25	10	2868	+ 9	400	583.89	7
14.	1:45	20	2857	L -11	680	583.01	8
15.	2:00	15	2865	+ 7	1390	584.40	H 12
			TOTAL VOLUME		13120		

NOTE: TAPE LATE IN PERIODS #1-9 & 15

COMPLETE THIS CHART



First page from a Home Study Exam on Stock Market Analysis*

* Courtesy Stock Market Institute, Inc.

nine

Audio Visual Material

Douglas M. Bonham

Introduction to Article

If a prospective student perceives a home study course as a series of "dry as dust" textbooks, he may never enroll. In this article Mr. Bonham discusses how audiovisual aids, kits, tools, and equipment can be used effectively in a course. He shows how the inclusion of educationally relevant AV materials can increase enrollments, enhance student motivation, and insure a long life cycle for a course.

Adding educationally useful and economically rational kits and aids to an otherwise dry paper and pencil course can mean the difference between the success or failure of a course.

Audio Visual Material

Douglas M. Bonham

To be effective a home study course must be more than a series of textbooks. If your course is perceived by prospective students to be just textbooks, enrollments will be disappointing. After all, textbooks are available free at any library.

One of the best ways to distinguish a home study course from a series of textbooks is to provide a variety of multimedia activities such as audio-visual presentations and practical experiments. This is the reason that many home study schools add audio visual material, kits, and equipment to their courses.

There are three major advantages to this approach. First, learning is greatly enhanced. Second, there are marketing advantages. Third, the course becomes more profitable. In short, everyone wins. The student wins because the course is more interesting, faster paced, and more instructive. The school wins because it is enabled to achieve acceptable enrollment levels and higher completion rates.

In this article we will discuss two "extras" that can be included with most courses: audiovisual presentations and kits or instruments (including tools). Let's start with audiovisual presentations.

AUDIOVISUAL (AV) PRESENTATIONS

Good AV presentations can add a great deal to a home study course. They provide welcome breaks from the tedium of reading and they en-

liven otherwise unexciting subjects. Moreover, AV presentations are an extremely effective way to teach. Recently the National Audio Visual Association (NAVA) conducted a survey to determine the impact of the various senses on learning. The survey indicated that 83% of our knowledge comes through sight and only 11% through sound. The same survey showed that someone remembers only about 10% of what he reads, 20% of what he hears, and 30% of what he sees. However, he can remember 50% of what he both sees and hears!

The NAVA survey showed why an AV presentation is so effective. In an audiovisual presentation we both see and hear the information. We should remember, however, that the visual impact is the more important of the two. The visuals should carry the message of the course with the audio playing a supporting role.

TIPS ON USING AV EFFECTIVELY

Here are some general guidelines for incorporating AV materials in a course:

1. Look at your overall course and determine those areas that can best be handled by audiovisual techniques. Choose those areas that lend themselves to this media. They will probably be highly graphic areas that would involve lots of figures and charts, even if done in standard text style.

2. Don't over use AV. Like any other media, AV can become tedious if used too much. The AV presentation should be no more than 25 to 50 percent of the total course material.

3. Keep each AV presentation short. Thirty minutes is about as long as you are likely to hold a student's attention.

4. Arrange the frames so that the student does not have to view any one frame for more than 15 seconds. This is slightly more time per frame than most experts recommend. But experience has shown that the economics improve without adversely affecting learning when fewer frames are used.

5. Don't underestimate the cost or magnitude of the job. A 30-minute program that averages 6 frames per minute will contain 180 frames. If done in four colors, each frame may require four hours of an illustrator's time. In addition, photographic separations may be necessary if printed visuals are to be used. The overall price can easily reach $100 per frame. Estimate your costs carefully before you begin. Otherwise you may run out of funds halfway through your course development project.

SLIDES, FILMSTRIPS, AND PRINTED VISUALS

The three basic formats for the visuals are slides, filmstrips, and printed visuals. Each format has its own advantages and disadvantages.

About the only advantage of 35 mm slides is that many people already have slide projectors. A student who does not have one already may be willing to buy a projector since he could use it for showing home slides after completing the course. The slides themselves are very expensive compared to filmstrips or printed visuals. When this expense is combined with the cost of the projector, the result may be more than a student -- or even you -- are willing to pay.

Filmstrips are a lower cost alternative. They are only a fraction of the cost of slides. Also, filmstrip projectors generally cost less. However, there is little a student can do with a filmstrip projector after he completes the course.

An interesting alternative to the above equipment is to use printed visuals. The chief advantage of this approach is that no special equipment is required. The visuals are printed in a booklet or on a flip-chart. The student follows the audio and flips the pages at the appropriate points. The media itself is less expensive than either filmstrips or slides. However, if color visuals are used, a photographic separation may be necessary. This can be a substantial hidden cost. Explore this carefully before deciding on printed visuals.

DEVELOPING AN AV PRESENTATION

There are many different ways to develop an AV presentation. The

method outlined below has worked well:

1. Pick a subject that can be taught in 30 minutes or less. If the subject is too complex, break it into topics of 30 minutes or less.

2. Determine the overall learning objective of this particular AV presentation.

3. Identify every single fact that the student must learn to meet that objective. Delete all non-essential information. As you will discover, AV is too expensive to present extraneous, "nice to know" material. List each essential fact on a small card so that they can be easily rearranged.

4. Arrange the cards (facts) in the best order of presentation. Experiment and determine the most straightforward and logical progession through the subject: simple to complex; known to unknown; etc.

5. Select the first fact and brainstorm a visual or a series of visuals that teach that fact. The visual may be a photograph, a line drawing, or merely a key word or phrase. Remember the visual is more important than the audio, so be creative. Illustrate, show, display, exhibit, visualize! Drive the message home with a picture. Make a sketch of the visual while it is fresh in your mind. Sketch it on the back of the fact card if possible. If an appropriate audio narration comes to mind, write it down. Otherwise don't worry too much about audio at this "creative juncture."

6. Select the next fact in the series and repeat the process. Remember, though, that there must be continuity between visuals. The visuals should lead logically from one to the next.

7. Continue this process until you have a visual or a series of visuals for every fact. Often transition visuals will be necessary to smooth the progression from one fact to the next.

8. Arrange the visuals in the appropriate order on a table top or story board. Re-arrange the visuals if necessary to form a linear, logical, inevitable, teaching sequence. Talk your way through the presentation as if you were delivering a resident class lecture. If possible, have a colleague observe your presentation and make suggestions. At this point the audio narration will begin to suggest itself, so make notes as you proceed.

9. You are now ready to develop the audio narration. Keep the narration short and simple. Don't describe the visual or go into unnecessary detail. Stick to the facts and keep it brief. Let the visuals do the work. Keep the script light and informal. Keep sentence structure and vocabulary simple. Remember that the student will hear your words, not read them -- so keep it conversational.

10. Once the script is complete, read it into a tape recorder and listen to the result as you view the visuals. Be critical and begin a polishing process by repeating the above steps until you are happy with the results.

PRODUCING THE AV PRESENTATION

Once you and everyone concerned are satisfied with the developed presentation, you are ready to start production. Once again, it is usually best to start with the visuals.

First decide which media you will use: filmstrip, slide or printed visuals. Then talk to vendors to determine their requirements. Let them suggest the proper type sizes, aspect ratios, etc. The visuals are expensive so find out what the specificiations are before you start.

Work with course illustrators or photographers to insure that they understand what you are trying to achieve. Frequently they will suggest ways to improve the presentation. Listen to them. After all, they are more accustomed to thinking visually. Refer to the script often as the visuals are produced.

In the production phase, the audio is as important as the visuals. You should use a professional recording studio and a professional

narrator. Select your narrator as carefully as you would a new employee. Listen to several and select the best voice for your audience and subject.

Be sure the narrator receives the script well in advance of the recording date so that he can come to the studio prepared. This is especially important with technical material that may be unfamiliar to the narrator. If possible, provide him with the visuals so that he can tailor his timing and inflection to your visual presentation. Here again, he may suggest some excellent changes in the script since he is more familiar with the audio media.

Often two narrators with distinctly different voices can be used very effectively. The most frequent arrangement is to alternate male and female voices every few sentences. This can make the presentation more lively and interesting.

The production phase involves several additional expenses that you should be aware of. There are illustrator, photographer, narrator, and studio fees. Expect additional charges for adding music or sound effects. There will be plate and separation charges if printed visuals are used and animation charges if filmstrips or slides are used. Be sure you understand all the expenses involved before undertaking any AV presentation.

If properly done, an AV presentation can be an interesting and rewarding teaching technique. It can add substantial educational and marketing value to almost any home study course.

USING KITS AND EQUIPMENT

"Kit" is a general term used to describe the various materials that some home study schools supply as course supplements. These materials include tools, equipment, instruments, components, and accessories.

The kits are provided because they are pertinent to the subject the student is studying. He may be asked to assemble a group of components either to learn construction techniques or simply to build a useful piece of equipment. He may put together components to perform an informative experiment or to demonstrate an important principle. He may run tests, collect data and draw conclusions.

Factors in Favor of Using Kits

1. Kits teach skills that cannot be learned properly only by reading a textbook. The use of training kits in a home study course provides an opportunity to "learn by doing." Persons employed in certain technical and vocational areas (such as drafting, air conditioning and refrigeration, television repair, and auto mechanics) cannot perform their jobs properly without being skilled in the use of the tools, equipment and instruments used in those trades. Kits can help familiarize a student with these tools. If a student is learning to repair a carburetor, why not have him build, study, and repair an actual carburetor?

2. Kits reinforce the text material. A theory or technique can be learned more quickly and retained longer if the textbook study is reinforced later by actual experimentation or practice. In effect, the use of a kit provides that important repetition of text material by allowing the student to put theory into practice.

3. Kits can help sell courses. Kits help sell courses because they provide a more exciting, interesting, attention-getting advertisement than a course without kits. A prospective student may be encouraged or persuaded to enroll for a course simply because he feels he will be getting not only sound education, but interesting kits and equipment as well. This is particularly true if the kits are assembled into some useful end product. The extra value provided by the kits helps sell skeptical prospective students on the less tangible educational part of the course.

4. Kits help sell auxiliary items. Many courses containing kits provide an ideal opportunity to sell other items of use to the student and graduate. A student constructing a television set, for example, may wish to buy additional tools and instruments that will permit him to perform experiments, tests and repairs beyond those taught in the course. The school can provide these auxiliary tools and instruments to the student or graduate at retail prices. Selling these items can provide good,

appropriate equipment to students at low cost.

5. Kits can motivate students. One of the most important jobs of a home study school is motivating the student to complete his training. Kits can help provide motivation through the student's desire to use the tools and equipment in the kits. By placing the larger, more interesting and more useful items toward the middle and end of the course, the school can encourage the student to continue and complete his training.

Factors Against Using Kits

1. Kits increase the cost of the course. Adding tools, equipment and kits to a home study course will naturally increase its cost to the school and therefore to the student. Although it would appear that an increased cost would cause fewer enrollments in a course, in practice this is not true. If two courses are equivalent in all other respects, the course with kits will outsell the course without kits, in spite of the greater cost. Since both the student and the school can profit from a course with kits, the increase in cost may not be a disadvantage at all.

2. Kits increase the complexity of the development and handling of the course by the school. The school that supplies kits becomes not only an educational institution and a publishing company, but also a "seller of hardware." The components of the kits must be ordered and stocked, which increases the school's inventory and handling problems. Some means must be provided for packing and storing, as well as proper mailing. The use of kits makes increased demands on the school and its staff. A school which is planning to use kits with a course should recognize these factors and make provisions to handle them so that there will be no surprises or unexpected complications later.

3. Kits in some courses are perceived more as "gimmicks" than as items of educational value. If this happens, it is the fault of the school rather than a fault in the kit concept. The school must design its kits so that they

are of sound educational value. The school must promote the kit in a professional, respectable but exciting way. There is nothing wrong with the kits per se, but it is the school's responsibility to see that they are of genuine value and are not "gimmicks." Also, school management should bear in mind that substantially thousands of the "non-enrolling," external public will probably see the school's advertisements in the national media. This critical audience may view with some skeptism home study ads which give the appearance of being "hardware store" bonanzas. Home study's image as sound educational institutions may well suffer as a result.

4. Training kits add to the student's workload. While kits increase sales appeal and interest, they may also cut course completion rates by making the course longer and harder.

The problem becomes one of trade-offs, where the advantages and disadvantages of kits must be carefully weighed for the course being considered. It is possible to select kits that do achieve the benefits mentioned but that do not overly complicate or lengthen the course. This delicate balance can be achieved if you remember to keep the kits simple, interesting, effective and pertinent.

Kit Development

1. Be sure the kits are of real educational value. Do not attempt simply to supply tools and equipment with a course. In such cases the school is serving only as a retail sales outlet for the items. While these items may increase the appeal of the course, they provide no educational value. If kits are supplied, they should be designed to make the student use the tools or equipment. The kits should provide the student with experiments to perform, tests to run, data to collect, or procedures to perform. Then the school must be sure to test the student on the things he has done. Ask the student to draw conclusions from the data collected or quiz him on the results obtained from an experiment.

Do not provide busy-work for the student -- make the experiments and procedures meaningful.

2. Key the kits and experiments to the course lessons and texts. One of the most important uses of kits is to provide an opportunity for the student to put lesson theories into practice. Sending kits in the proper sequence and making the kits refer directly to the lessons are ways to provide continuity between theory and practice.

3. Regardless of the type of course being considered, try to find some form of kit or instrument for that program. Take a hard look before you decide that kits cannot be used with a particular course. There are few courses that cannot be made better with the addition of kits and equipment.

4. Try to provide a useful end product. If possible, provide the student with tools, kits and equipment that will be useful to him after the course is completed. It will make the course more desirable from a sales standpoint than a course with kits that will not be useful to the student later on.

CONCLUSION

Audiovisual presentations and kits can add considerable value to a home study course. The next time you revise a course or begin development of a new one, you may want to consider one or both of these alternatives. Both techniques can enhance the course's educational value and increase student motivation while giving you a more marketable and profitable course.

ten

Course Design and Layout

Robert B. Hamilton

Introduction to Article

An effectively designed and well illustrated course has many obvious advantages: student motivation and course completion can be measurably enhanced.

Mr. Hamilton presents an informative and practical overview of the various design and layout techniques available to the home study course developer.

There are no pat formulas for good course design. Mr. Hamilton describes the numerous type styles, illustrations and printing techniques and other tools which will lend themselves to effective course layouts.

In this article and its companion, article eleven, we see the final applications of the guiding philosophy behind good home study text design which were discussed in earlier articles.

Course Design and Layout

Robert B. Hamilton

Course layout ranks in importance with the accuracy of our material, sound testing principles and valid instruction techniques. Home study educators should make every effort to encourage and motivate the student to make his studies more enjoyable and to build and support student confidence in our material. This can be accomplished, at least partially, through effective lesson design and layout.

This article describes the ingredients of layout and format and looks briefly at their inter-relationships. We will consider some of the decisions and compromises that must be made and the factors that will influence these.

It should be pointed out that while we can touch briefly on typography, technical illustration and printing, these fields are extensive studies in themselves. Much valuable help and counseling is available, and should be sought, from trained practitioners in these fields.

PAGE SIZE - FORMAT

An early consideration when laying out a new text is that of page size. There are many factors affecting this decision, both practical and aesthetic. On the practical side, stock paper sizes are advisable as they generally contribute to economy in a number of ways. While stock sizes will result in little or no wasted paper, the economics do not stop there. Stock sizes allow signature production -- that is, the printing of multiples of four pages to a single sheet of paper, and avoid additional

cutting charges while allowing the use of standard binders and binding techniques as well as fairly standard envelopes and mailers. Other practical considerations affecting page size can be dictated by the material itself. Large format lends itself to larger illustrations, larger type, the positive effects of white space, and a more open appearance. Some students tend to be intimidated by double spreads or even single pages blocked solid with type. Breaking up the page with white space, headings and illustrations will relieve this. Art and photography courses are excellent candidates for larger page size because of the graphic nature of the material.

If large size is not necessary, consider the advantage to the student if he can put a smaller size text in his brief case to study on his lunch break or while traveling. . . a return to the ICS lesson of the 1890's!

From a purely aesthetic standpoint, some rectangular shapes are more naturally pleasing than others. Generally, those which conform to the "golden rectangle" are most used. The golden rectangle is a relationship which has evolved through the ages and also occurs quite often in nature. A rectangle conforming to the golden mean has its sides in the approximate ratio of 1:1.6. We surveyed a number of texts and found that, while page sizes generally did not conform to this, the blocks of type on those pages often did.

BINDING

The most common forms of binding home study texts are loose-leaf and saddle stitch or saddle wire. Loose-leaf allows the use of ring binders for multiple course units or individual brief covers for each unit. The loose-leaf system facilitates changes and updates through replacement pages. Another form of soft binding is the plastic type. This uses a multi-leafed or pronged plastic sleeve. This requires special punching and binding equipment so single pages are not as readily replaced. Saddle stitching is not stitching as the name would suggest, but stapling in the central fold of the material. Changes here generally require redoing the text at the printers. Two other types to consider are side stitching and perfect binding. Side stitching consists of staples passing from front to back through the text, set in from the edge. Perfect binding uses a flexible glue to hold the pages together. Neither of these will lay flat, and pages cannot be readily changed.

It can't be overstressed that your printer should be brought into dis-

cussions very early in the game. He can advise you of his capabilities and help prevent needless problems later in the project. For instance, you should try to have all printing and related tasks performed under the same roof. If it becomes necessary to shop the work to another location, say for drilling and binding, it is almost impossible to do so without delays and additional expense. The printer can be a valuable asset. One should consult him early and often and, in turn, keep him informed. Article eleven elaborates on the topic of working with printers.

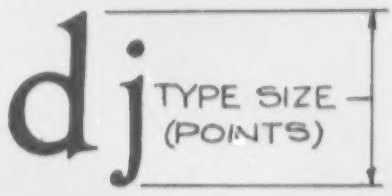
TYPE SELECTION

Once we have selected a page size we must arrange blocks of type along with photos, tables and illustrations to make up the text proper. Let's look at the factors influencing type selection and arrangement.

There are hundreds of type faces available to the typographer from which he may select to set a mood or suggest a specific characteristic, such as dignity, elegance, whimsy, etc. These factors in our work are not as important as readability. While we might specify a feminine face for a women's fashion course or an old style face for a course on antiques, we should avoid script, old English, and other difficult-to-read faces. There are some obvious advantages to specifying standard and readable type faces. One, of course, is the ease of making changes and additions after printing, even with a different typesetter or compositor. It is also possible to match the face on artwork with inexpensive transfer letters for headings in the larger sizes. As a further consideration of readability, in designing texts and manuals for use in the shop where they may get dirty, you should specify a larger, more open face, which will be less likely to fill in and become obscured.

TYPE SIZE

Type size is another factor to consider. Type size is measured in points. It is the distance from the top of an ascending letter to the bottom of a descending letter.



The most commonly used type sizes for text run from 6 to 12 point.

This line is set in 6 point type.

This line is set in 8 point type.

This line is set in 10 point type.

This line is set in 12 point type.

A point is .0138 inches or about 1/72 of an inch. Of course, the use of smaller type will allow more text per page, but this consideration should be secondary to readability. The mechanic's book mentioned above might be a candidate for large type, as might one directed to elderly readers who might appreciate a larger type for easier reading.

Once type has been selected, we should consider the length of our lines. Lines which are too long or too short make for difficult reading. This is another point which you should consult your printer or typographer. Have him set a paragraph or two in your selected type face with varying line lengths and leading, or line spacing.

LEADING

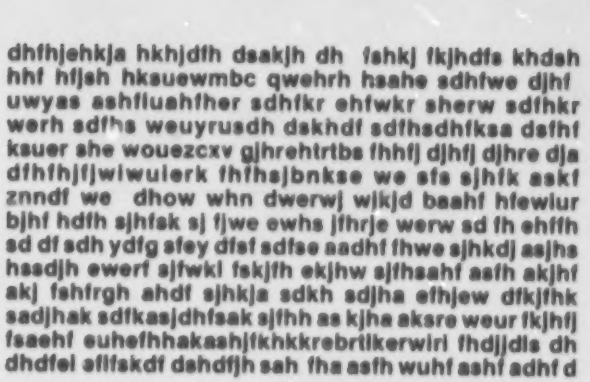
Leading (pronounced "ledding") is the distance between lines, measured in points, which also has a bearing on readability. Leading requirements vary with type face and line length. Those faces having long ascenders and descenders, that is those which extend further into the white space, require more leading. Longer line lengths also require greater leading so that one can readily "find" the start of the next line. It should be pointed out that too much space between lines can be detrimental too.

These lines of type are set with no line spacing or leading. You can see that there is little white space between lines.

These lines of type are set with 1 point of line spacing. Note that there is more white space here than there is in the example above.

These lines of type are set with 2 points of line spacing. Here there is even more white space than either of the above examples.

Once type style and size have been selected and coupled with effective line length and leading, we will have blocks of type of a given density. These blocks will be arranged as grey masses on the page. Small, bold, tightly spaced type results in a high type density and a very dark grey effect, whereas larger finer type faces with greater spacing will result in lower type density and a light grey mass. These blocks of type will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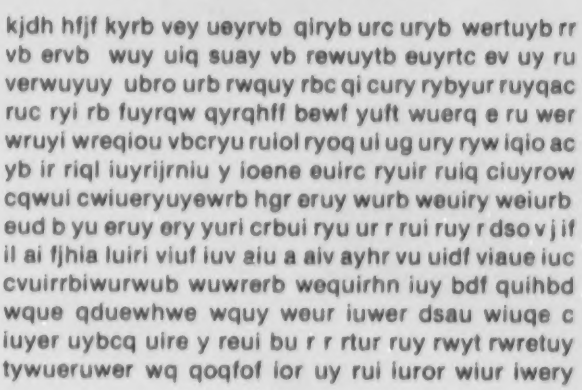
(High Type Density)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(Low Type Density)

be arranged with illustrations, photos, charts, tables and headings to produce individual page layouts. In passing, it should be noted that rectangular blocks of type are the most readable. Type arranged in other geometric forms -- triangles, circles, etc. -- should be avoided. While this can sometimes be eyecatching and effective in advertisements, it is unlikely it will be successful in text.

Before going on to discuss illustrations, let's look briefly at italics and bold faces, and their use. Each family of type has a number of similar faces from light to bold, and generally includes italics.

ILLUSTRATION OF THE UNIVERS FAMILY OF TYPE

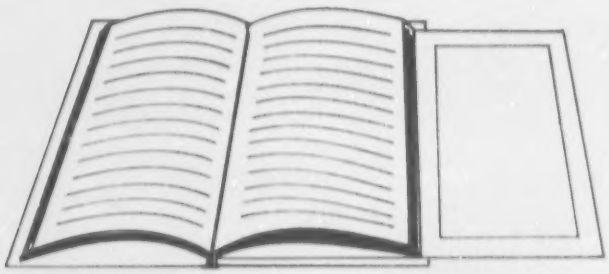
Univers Light	Univers Light Condensed
Univers Medium	Univers Medium Condensed
Univers Medium Italic	*Univers Medium Italic Condensed*
Univers Bold	**Univers Bold Condensed**

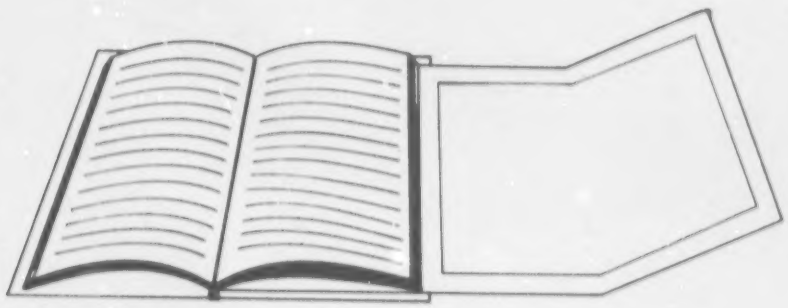
(Type families are included in Type Specimen handbooks.) Your printer and your art department should have one of these. Italics are primarily used for emphasis and, of course, lose their effectiveness if overused. Bold faces usually find use as headings and titles.

ILLUSTRATIONS

The purpose of illustrations is to amplify and unify the text. In order to do this, each illustration should be relevant, consistent, and have reasonable proximity to the text it supports. Whenever possible, try to put the illustration on or opposite the page to which it applies to prevent a lot of hunting back and forth particularly when the text requires repeated reference to the illustration to understand numerous interrelationships. Keep in mind that the text is the home study student's classroom.

When it cannot be arranged to have an illustration directly with the applicable text, it can sometimes be incorporated as a foldout which can still be viewed simultaneously with the text. This, of course, will be a larger page. Be sure your printer can handle this and has the proper folding equipment.





There are many types of illustrations, each suited to a particular use. Charts and graphs can effectively show relationships not readily obvious in columns of figures. In this regard, one should rely heavily on the author. He should be well versed in his material and in the accepted conventions of his field. In many fields, comparison of curves are routinely made so adherence to graphic standards is mandatory.

An illustration should depict as simply as possible the principles involved. To this end, simplifications may be required such as subdividing complex assemblies or circuit schematics into smaller more understandable units. A full page cutaway drawing of an engine, for instance, is extremely valuable to convey overall relationships, but to illustrate the drive train, a drawing showing only those parts involved will illustrate the mechanism directly and simply without the introduction of unrelated parts. In electronics, a block diagram conveys overall operation, or the "big picture." The details of each block are then explored and illustrated separately.

There are many types of special illustrations that can be considered for special purposes. Cutaway drawings can show the internal makeup of a device, and an exploded view may show how it is assembled. These can often be used interchangeably, but sometimes one is more effective than another. Your author again should analyze the illustration for proper emphasis and correlation with the text.

TYPES OF ILLUSTRATIONS

Illustrations fall into three basic categories -- line, halftone, and color. Artwork for line illustrations, as the name suggests, is made up of pure lines and black areas. This technique lends itself well to charts, graphs, and schematics as well as working drawings and technical illustrations. Line work is the least expensive to reproduce and provides maximum contrast. It is also relatively easy to stick to the subject, showing what is necessary, and no more.

Halftones are illustrations which reproduce the range of gray tones between black and white. Photos are examples of halftone illustrations as are reproductions of art done in varying tones. The reproduction is made by photographing the art through a screen which causes the image to be broken down into dots of varying size depending on the tone of gray at any particular point on the art. Dark areas will have large dots, while light areas will have much smaller ones. These dots then print

black, of course, but because of their size convey the impression or illusion of gray. The dot or screen size will vary with printing process and paper surface. Newspaper halftones use a fairly coarse screen, whereas quality magazines done on smooth stock can use a very fine screen.

Halftones are more expensive and can suffer from insufficient contrast, or lack of tonal separation. When photos are used, care should be taken to ensure that there is no question of the subject of the photo. The subject of the photo can be isolated and emphasized a number of ways. Spatially, of course, we can make the subject stand alone and photograph it so that it clearly is the center of interest. We can also make the subject stand out by providing sufficient tonal difference between subject and surroundings. Of course, the photo should be the most appropriate one possible. To cite an exaggerated example, if you were writing an article on the league's home run record holder, you would want a photo of the player swinging a bat, rather than a team photo with a caption locating our hero as third from the left in the back row.

Another way to emphasize the subject is to isolate the background by airbrushing or by overlaying a tone sheet.

Color illustrations, while more complex and more costly, can be used in a number of very effective ways. First, of course, as a pure color illustration -- say a reproduction of a photo or full color art. Color can also be used in line work to differentiate between parts of complex mechanisms or to indicate different stages of processes or interwoven flows through systems.

Color printing is more expensive than black and white, as multiple printing plates are required and multiple press runs. The preparatory art work for color is also more complex and expensive.

A simpler, less expensive use of color is the addition of a single color. In halftone work, often a photo, or parts of it, can be toned effectively, and in linework, a color or colors can be used to isolate different stages or segments of a process, or on graphs to plot different parameters on a single graph. Needless to say, there are many possible applications.

When considering color work, one should think in terms of signature production, and arrange to have color pages in multiples of four to accommodate this; again, consult your printer. If he is going to run

your job with 8 pages to the signature, 9 color pages would be a poor choice, necessitating an additional color signature for one additional color page. Obviously, 8 or 16 pages would be more logical.

Another consideration in color work is the use of stock colors, such as these on "PMS" cards. The Patone Matching System provides a wide range of standard, readily available colors. Your printer and your art department will be familiar with this system. (Pantone, Inc., 55 Knickerbocker Road, Moonachie, New Jersey 07074.)

MINIMIZING PROBLEMS

There are a few problems which can be avoided when preparing illustrations for printing. If an illustration is drawn larger than the size it is to be printed, care must be taken to consider the effects of reduction: light lines may disappear, or break up, close lines may merge, lettering may fill in and become illegible, and dot structures of commercial tone sheets will tend to merge, creating a darker tone or even a solid black. These situations can be avoided if considered beforehand.

Another problem is that of callouts. When parts of an illustration must be identified, the best way to do this is to call it out directly by name on an arrow or leader. You should avoid the balloon system, which identifies the part by number and requires further searching to relate the number of the part name. The additional searchers, (one for the cross reference table and another for the reference itself) tend to take the student too far from the text. The balloon system has justification, however, in parts lists and in manufacturer's drawings.

The actual page layouts, or the arrangement of components on the page, can vary from course to course, or even within the course. International Correspondence Schools, for instance, has designed specific text formats to best present various subject areas. Their automotive text format was designed to make use of many different size illustrations which can be accommodated in either the text copy, the column containing the legends or captions, or in the full width of both columns. Their business management texts, on the other hand, contain relatively few illustrations, therefore a single column of type is used with all illustrations centered within that column.

Art Instruction Schools uses a large format and varies the appearance of pages within each text to keep it interesting. Some pages are very

busy while others have lots of open space. They always have art and related copy on the same spread, and usually try to complete a demonstration in a single spread so it can be studied in total. In some cases, however, a demonstration might cover many pages. In one demonstration of design principles, the artist begins with a simple pair of scissors and represents it in different ways. When complete there are twelve separate series of sketches, covering 18 pages -- each one of the series evolving from its predecessor. Here, the length of the demonstration becomes important and with a little imagination is used to emphasize the vast number of possibilities, and to indicate the lengths to which the student should go in his efforts with similar problems.

New York Institute of Photography uses a 22 page portfolio of beautiful photos and text to open their first lesson. Each page contains a dramatic photograph, a few words of related text, and a lot of white space. This introduction accomplishes many things. First, it conveys to the student some of the school's philosophy of what it means to be a photographer, it provides a number of widely diverse photos which are analyzed later, in text, and on cassette tape. Most importantly, however, is its inspirational/motivational effect on the new student. After turning through these pages, the student has seen what others have done, he is anxious to begin, and it's highly unlikely one could stop him from turning the page to the unit on Camera and Lens. Furthermore, he cannot help being impressed by the quality of the material. He knows this will be a great course!

CONCLUSION

Perhaps the most important point of all of this is that there is no single answer, no unique perfect solution, and no pat formula which can be applied to every layout. There is no better way to illustrate this than to include the following portfolio of excellent examples of illustrations and layouts kindly provided by Art Instruction Schools, Heathkit Continuing Education, International Correspondence Schools, National Camera, and New York Institute of Photography. Our thanks to these schools and to their personnel for supplying this material, and for graciously providing suggestions, advice, and valuable insights.

3. When you apply a high-voltage pulse to the flashtube, the gas becomes _____.
4. The _____ discharges through the flashtube to provide the pulse of light.

Figure 1

(This page from National Camera School texts is a good example of keeping the illustrations with the applicable text.)

CHARGING THE MAIN CAPACITOR

That small power input we mentioned may be nothing more than a small pair of AA-size dry batteries. The AA-size batteries frequently power the small, amateur-type units, Fig. 6. Usually, these units also include an AC-power cord. So, if your batteries are dead, you can just plug the unit into an AC outlet and get your power from the wall.

Large professional-type units may get their power from high-voltage batteries. The high-voltage battery, packing a punch of around 500 volts, is pretty large. So it requires a separate battery pack as shown in Fig. 7. Professional-type units like the one shown in Fig. 7 also come with an AC-power cord for studio use.

But the most popular battery for electronic-flash units is probably the rechargeable secondary battery — the **nickel-cadmium battery**. In a way, the nickel-cadmium battery is like the battery in your car — you can recharge it.

Fig. 8 shows a nickel-cadmium battery made up of 10 nickel-cadmium cells stacked together. The open-circuit terminal voltage of each nickel-cadmium cell is around 1.25 volts. So the particular battery shown in Fig. 8 provides a little over 12 volts.

The nickel-cadmium cell (frequently abbreviated "ni-cad" cell) uses an alkaline electrolyte and a cadmium negative plate. It has several strongpoints. For one, the output voltage remains relatively constant for more than 90 percent of the rated discharge period. The voltage drops only about 10 percent during discharge at rated current capacity. And it discharges very little when not in use.

FIGURE 6

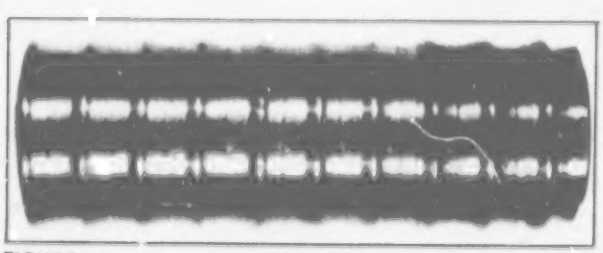


FIGURE 8

FIGURE 7

175

Figure 2

(Eye catching cartoons can be used to reinforce a point as is illustrated in these examples from two National Camera School's courses.)

But the main advantage has to be the rechargeable feature. Units using the nickel-cadmium battery come with a recharging transformer that plugs into an AC outlet, Fig. 9. Usually, the recharging transformer recharges the nickel-cadmium battery at a very slow rate — it may take 12 to 20 hours to fully charge the battery. But the recharging transformer also serves as the AC coupling. So, even while you're charging the battery, you can fire the flash on AC.

The recharging unit uses a step-down transformer to convert the input AC voltage to the voltage needed to charge the battery. Inside the flash unit, there's another transformer — a step-up transformer that converts the battery voltage to the high voltage needed to charge the main capacitor. Consequently, your power supply of only 3 - 12 volts sounds pretty safe. But there may be 300 — 500 volts stored inside the flash unit!

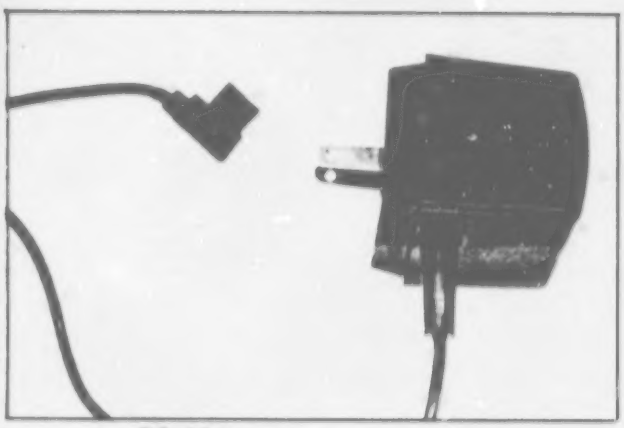


FIGURE 9

DANGER — HIGH VOLTAGE

The high voltage stored across the main capacitor is what scares a lot of technicians. But you can make the capacitor safe to handle by following some routine precautions. Remember that the main capacitor in an electronic-flash unit may store up to 500 volts. So as soon as you open an electronic-flash unit, be sure to **discharge the main capacitor**.

One way to discharge the main capacitor is to simply short across the capacitor leads with a screwdriver — that ruins screwdrivers and capacitors. A better way is to discharge the main capacitor through a low resistance.

A 100-ohm wirewound resistor is a good discharging tool — 100 ohms for a low-resistance discharging path, wirewound for high current-carrying capacity. But an even safer method is to

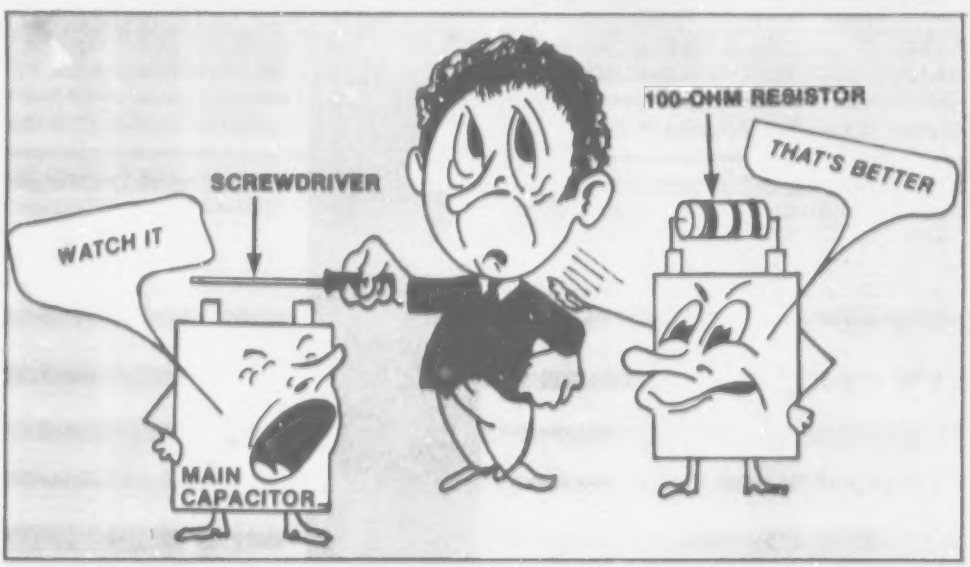


FIGURE 10

helping your customers gain maximum enjoyment from their equipment. In the final analysis, both you and your customer are better off.

Inventory control and mailing advertisements to your customers provide two other common uses of sales records. Say you're working in a relatively small store. The employer or person in charge of reordering merchandise may use the sales records to determine what must be ordered—and how much. Sales records also permit your employer to mail advertisements, sale announcements, and the like to all of the store's past customers.

If you're the only salesperson in the store who maintains sales records, your employer may be suspicious of your motives. He may think that you intend to steal his customers if you ever leave his employ. Assure him that's not your intention. And explain how the records will increase your sales and his profits. Selling photographic equipment is a highly personalized business. And good sales records contribute significantly to personalized service.

Figure 2 cont'd.

PHONE POWER—HOTLINE TO SALES

How do you use all the information on your sales records? An excellent way is with the telephone. Top professional salespeople in our industry know that the finger dialing a telephone points the way to sales.

Want proof? *Department Store Economist*, sales bible to the merchandising trade, states that "at least 5% of the phone calls made to customers result in sales." Professionals aren't content to wait for customers to come back again. They go to the customer, via telephone, and build sales on such contacts.

Suppose you make five calls a day, each working week. That's 25 calls a week, or (assuming a 2-week vacation break) 1,250 calls a year. Based on the figures from *Department Store Economist*, at least 62 of those calls will result in sales. By employing good selling principles, it's likely that you can achieve an even higher percentage.

So a percentage of calls result in immediate sales. Almost as important is the number of future sales which result from your calls. A customer may not have an immediate photo need. Or he may not wish to spend the money at this time. But it's very likely that he'll be flattered and pleased by your personal interest in his enjoyment of his photo equipment.

And, when the time comes to buy, you'll probably

Figure 3

(Figures 3 and 4 are from ICS Automotive text and illustrate the use of different size illustrations in a single format.)

Drive Shaft and Transmission Removal

24. You'll probably disconnect the drive shaft at the rear flange (yoke) of the universal, at the differential drive pinion, unless there's a center joint which must also be released from its support. Pull the drive shaft rearward to remove the slip yoke of the front universal joint from the transmission output shaft.

Before you remove the transmission, be certain of the location of the rear engine mounts. On many cars these mounts support the transmission, as in **Fig. 33**. This means that you'll have to support the rear of the engine with a jack stand. Remove the flywheel-housing bottom cover, install the jack stand, and proceed to disconnect the transmission mounts. Sometimes you'll find a removable frame cross member that must also be disconnected prior to or during transmission removal. By now you understand the need to check the manufacturer's instructions anytime you work on a car that's new to you.

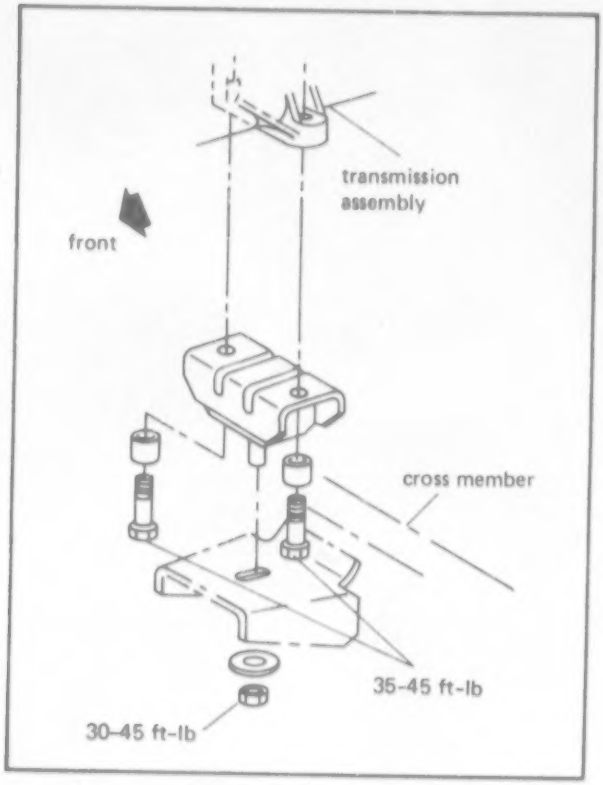


Fig. 33. Many automobiles are designed with a one-piece assembly of engine, clutch, and transmission supported at the front by engine mounts attached to the engine block. The support at the rear is located between the transmission and a cross member of the car's frame. Note the specifications for torque at the mount bolts and nut.

After making the necessary preparations, remove the bolts (cap screws) holding the transmission to the clutch housing. Support the transmission with a jack stand, at the rear of its case, while you loosen and remove the cap screws. Avoid warping the case flange by loosening the cap screws in a crisscross pattern. Holding the transmission firmly on your shoulder, lower the jack stand slightly and pull the transmission straight back until the pilot end of the input shaft has cleared the throw-out bearing. Carefully place the transmission on a cart or workbench. Make sure it is securely stored in an upright position so that oil does not leak out.

Clutch Disassembly

25. The first step in removing the clutch assembly is to disconnect and remove the clutch release fork. A type of clutch release fork is shown in **Fig. 34**. Secure the clutch release linkage so that it does not

Figure 4

Fig. 34. This particular clutch release fork is mounted on, and pivots upon, the release fork ball shown at the right. The release fork ball can be removed from the clutch housing by loosening and removing its support bolt. The clutch release bearing sleeve fits over the bracket at the right-hand end of the fork.

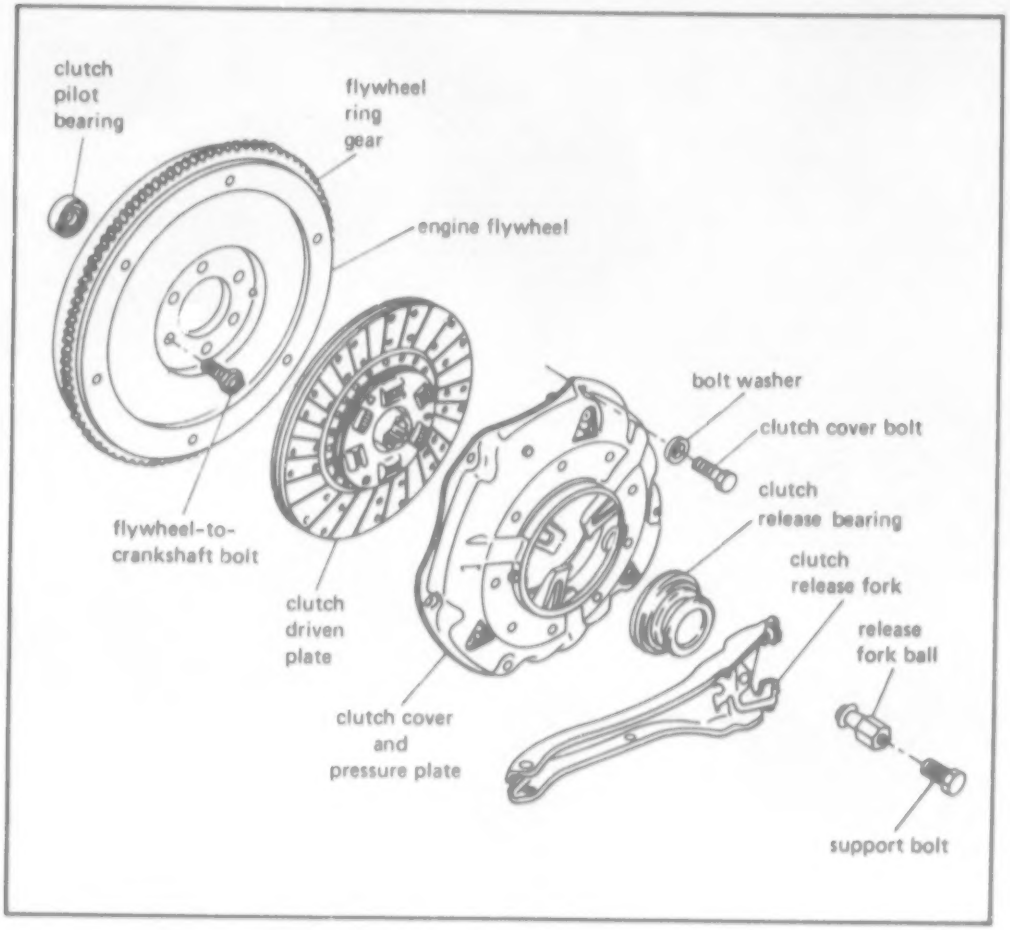


Fig. 33. This coil spring is under considerable tension in its present position. Remove the shock absorber and front wheel, and then install a special tool to compress the spring before disconnecting the spring mount bracket.

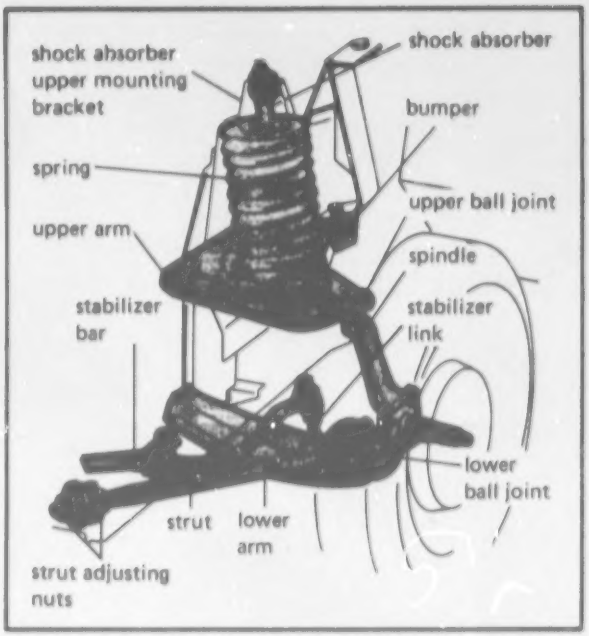
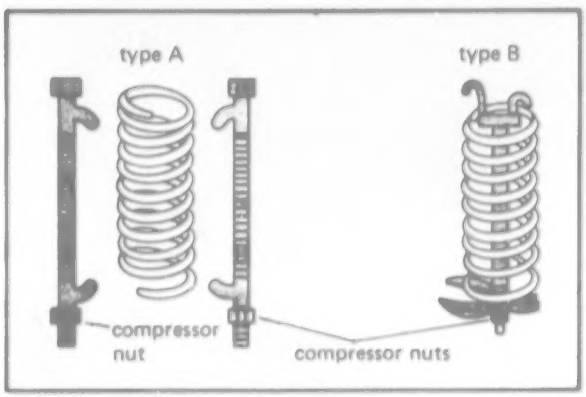


Figure 5

(Figures 5 and 6 are two more examples of the ICS format allowing for a variety of illustrations. Note how the illustrations are toned to isolate items of importance, and related parts are shown lightly in line for reference.)

the wheel to hang free, and the coil spring. **Fig. 33**, will be expanded to its maximum length on the car. Remove the wheel and tire assembly and the shock absorber. Install the preferred type of coil-spring compressor tool. **Fig. 34**, and tighten the nut (or nuts) until the spring is compressed enough for easy removal.

Fig. 34. There are two types of coil spring compressors. Type A is attached to the outside of the coil spring. Type B is attached inside the coil spring.



To install the coil spring, reverse the procedure. Be sure the spring is properly located in its seats before removing the compressor tool.

Rear Coil Spring Replacement

39. To replace the rear coil springs, the automobile must be raised by a hoist or jack until the wheels are at least 8 in. from the floor. Floor stands should then be placed under the frame rails to support the vehicle safely in its raised position. With a jack, raise the axle housing until all weight is off the shock absorbers, and then disconnect the shock absorber lower studs. On some automobiles, it may also be necessary to disconnect the track bar (a track bar is used on some vehicles to prevent side movement) and loosen the control arm bolts. The track bar is extended between the upper control arms. Now lower the axle housing on the jack until the coil springs are free. The springs and the spring pads, or insulators, can now be removed from the vehicle. To install new coil springs, simply follow the directions for their removal in reverse.

Torsion Bar Removal

40. To remove a torsion bar, **Fig. 35**, first jack up the automobile and place jack stands under the frame. Next, release the tension on the torsion bar by loosening the anchor adjusting bolt. You may have to apply penetrating oil to loosen the anchor adjusting bolt. Remove the lock ring, the plug (if one is used), and the balloon-type seal. Withdraw the torsion bar from the rear. An exploded view of the torsion bar assembly is shown in **Fig. 36**.

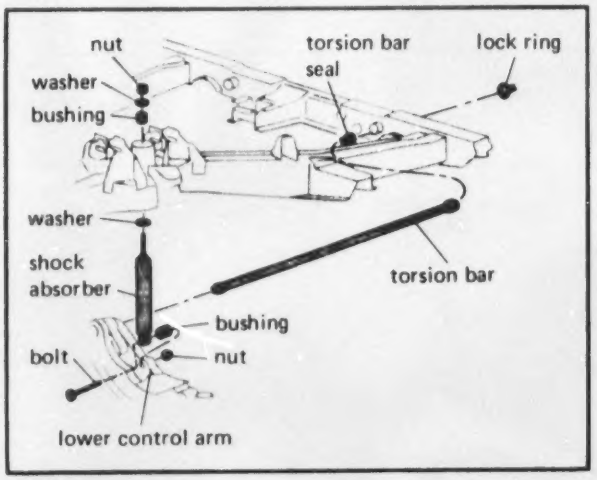


Figure 6

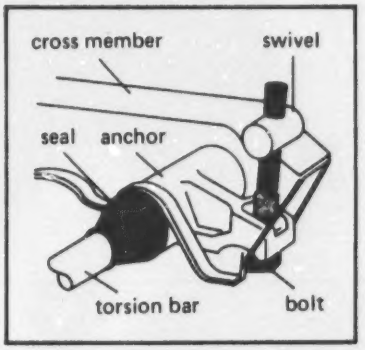


Fig. 35. After the vehicle is properly elevated from the floor loosen the torsion bar adjustment bolt. This releases tension from the spring. You may not be able to remove all of the tension from the torsion bar, so be very careful as you remove it. Don't let the bar flip out of your grasp as it is removed.

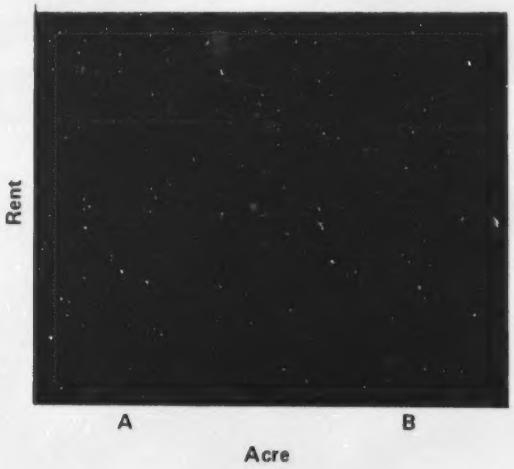
Fig. 36. This assembly appears to be a simple arrangement. However, there are specific instructions that must be followed when you remove or install a torsion bar spring assembly. These have to do with your own safety and with vehicle performance. Always check the shop manual.

Figure 7 (Figures 7 and 8 are from ICS courses. Note the use of white space.)

Review Quiz

1. For a payment for the use of a factor of production to be classified as rent, the factor's supply must be _____, the elasticity of supply must be _____, and the factor must have no_____.

2. In the following diagram, if the supply of land is allowed to increase through investment from point **A** to point **B** and the demand remains fixed, what is the effect on rent?



3. What do economists generally mean by the term **interest rate**?

Answers

1. perfectly fixed, equal to zero, alternative uses. Art. 13
2. The effect is a decrease in the price of rent per acre. Art. 13
3. Economists mean the rate on long-term, safe government bonds with no risk of default. Art. 18

PROFIT

Figure 8

Profit–Not Clearly Defined

19 Another income category is **profit**. Profit differs from the other income categories because it is not clear what it is and what accounts for its existence. Wages represent payment for the work done by persons. Rents are payments made to owners of land and other factors in fixed supply for their use, and interest is the compensation for the use of money or credit. Profit cannot be identified with a specific production factor with the same clarity that other income components can.

Everybody has heard that profits go up and down. Businesses report profit figures, critics of big business always claim that profits are too large, and corporation executives always say that profits are not enough. But what actually is profit and what causes its existence?

Imputed Factor Income

20 Some economists will tell you that there is no such thing as profit and that what is reported as profit is actually income of a different kind, but not reported as such. Much of the reported profits of a small business, for example, may be part of the wages of the owner, the rent he does not pay if he owns his place of business, and the interest the owner could get

Figure 9

(Spot drawings and an outline format are used to break up this spread from Art Instruction Schools text. The outline format is also a good way to emphasize important points. Note that examples used from Art Instruction courses are reduced from a larger format (10 1/4 x 13 3/4) to fit the requirements of this article.)

ferent? Did he seem cordial and interested? Did he try to be helpful, etc.? Such information jotted down immediately after the interview will serve to trigger your memory into a clear recollection of the interview weeks later.

If you don't hear from a client in a reasonable length of time – within a month or six weeks – send a short letter reminding him of your availability. Your letter might include a

Show samples that fit the buyer's needs.

request for another appointment to talk with him. It's a good idea to enclose a few copies of your best work to remind him of your style of illustration. You can have line art reproduced very inexpensively by means of a Xerox copier or some similar device. Halftone art can be reproduced for you by almost any photographer.

When you get a reply from the client confirming an appointment date for another interview, it might be wise to prepare a couple of new samples which are as close as possible to the kind of art he needs. Based on the samples of illustrations he showed you when you were interviewed the first time, try to emulate the kind of thing he likes, personally.

If it happens that your original interview and follow-up occur in the summer, you will probably have to be patient. Summer is often very slow in the publishing and advertising business. If you begin thinking you'll never get any response, don't be discouraged. It may very possibly be due to this seasonal nature of the business.

THOROUGHNESS PAYS

Although at times you will doubt that it's ever going to happen, your patience and persistence will eventually pay off. One day, perhaps when you're least expecting it, the mailman will deliver a large envelope to your door. You look at the return address. It's from one of the clients you had contacted. Your heart is pounding. Almost breathless, you rip it open. At last, you've hit it! He wants you to do an editorial illustration for him. He has sent along a dummy layout and a copy of the story. You make a frenzied dash to your drawing board, snapping up a handful of sharpened pencils on the way.

But wait! Slow down. You'd better clarify a few things in your own mind first. Look through the contents of that envelope again, a bit more carefully this time. Make certain you thoroughly understand all of the job requirements. Study all of the material with great care in case there's some little thing you've missed. Be sure you are perfectly clear on the payment rate and deadline. If there is anything at all you don't understand about the job, find out. Write a letter to the client immediately, requesting clarification.

If the illustrating job is to be for a client in the same state in which you live, he will most

Be neat.

likely call you on the phone. If such is the case, be sure to take notes. He may want you to come in to his office to talk over the job and will then give you the material you will need, such as the story or advertising copy related to the job.

Whether your client gives you the job assignment by mail or in person, there is some essential information that you must get pertaining to the illustration itself. It would be wise for you to write up a check list on a 3 x 5 file card, and refer to it when getting your job.

1. You'll need to know what type of illustration it is – editorial or advertising.
2. Find out exactly what effect the client wants from the illustration. Find out what image it must create or the message it's to deliver.
3. Learn all you can about the client's audience. You should know their average age;

SERIES 2

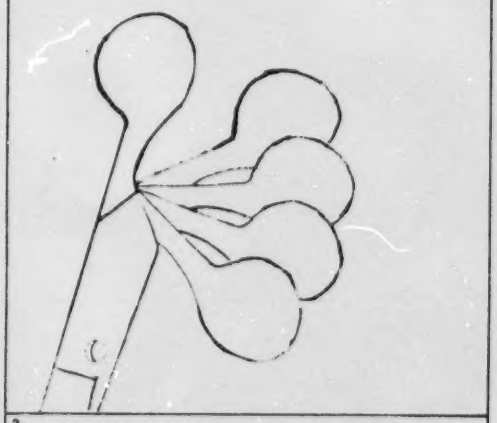
Figure 10

Each of us is unique and individual in his way of seeing the world and solving problems. Instead of focusing on the whole scissors, the artist zeroes in on the handle of a blade . . . tries to position it interestingly in space.

1.

The angle of placement intrigues our artist. He blows up the scissors and changes its proportions, making the blade fatter in relation to the handle. This throws the positive shape – the shape of the scissors – into better relation to the negative shape – the background. But there's still too much negative shape, in proportion to the positive shape. That means the two are out of balance.

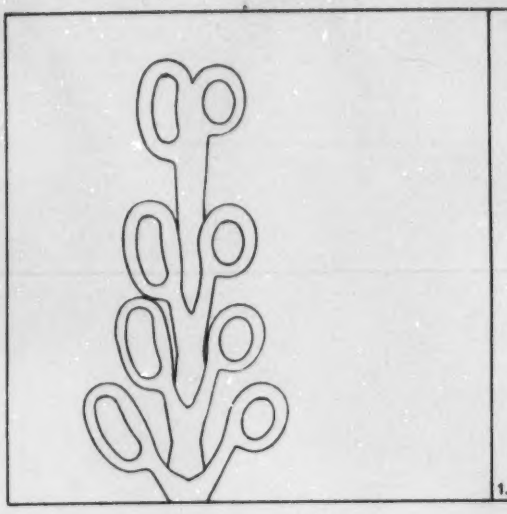
2.



3. Repetition can be a useful tool for the designer, an expansion of the idea from which it springboards. The artist knows this. By leaving the original form as it was, but repeating the handle shape, he adds a sense of visual movement to his pattern . . . creates a better balance between positive and negative shapes without disturbing the design's unity.

4. It's an interesting positive-negative shape relationship. Now the artist adds simplicity and emphasis, coloring the scissors solid black so that it becomes a silhouette, starkly dramatic. Though totally different from the designs in series one, it demonstrates clearly the value of visual experimentation.

(Illustrated in figures 10 and 11 are two pages of the "Scissors Series" from Art Instruction School's advance design course. The actual demonstration runs 18 pages, the length emphasizing number of possible arrangements or design.)

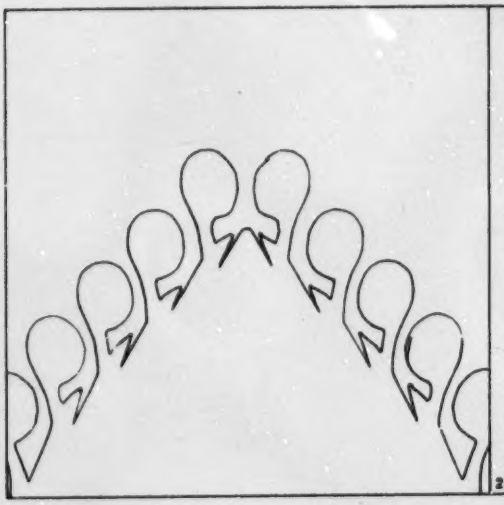


This first picture is created by tracing around the outside edge of the scissors four times. Each time the scissors are lowered on the paper and opened wider. The bottom pair form a secure base for all above. The result is a beginning design that emphasized imaginative use of multiple image.

Drawing the outside edge of things is called *contour* drawing.

1.

Figure 11



Here the triangle idea and the device of opening up the scissors is continued. But it is handled in a manner that creates an interesting unscissorslike pattern. Can you figure out how he developed *picture 2* from picture 1? Your own aptitude as a designer will be reflected in your ability to see the possibilities a given situation offers. Sometimes you'll change one or more of the object elements. Or you'll change placements or relationships — or all three. Experiment with this, building an idea, step by step, to a new design.

2.

This final design is the result of moving the scissors handles, then drawing the contour lines close to each other. The line combinations create a checkerboard pattern, as if we had a photograph of rapid movement: opening and closing of scissors handles. Coloring a few of the diamonds adds an impression of volume and visual interest to the design.

The artist could of course have carried his idea further in various directions—by completing the circle, for example. That's what makes design such fun. You work with a combination of skill, imagination, and fortuitous circumstance — luck, the "happy accident." You yourself decide how far to take your project.

3.

Sketching from Life

Sketching "from Life" means drawing real people, animals or objects, as opposed to drawing from photographs. Some artists consider sketches as a sort of quick note taking while others think sketches can be fairly detailed studies. Both approaches are valid. Whether you work quickly or spend several hours on a sketch depends on your temperament and on whether the subject you've chosen will "sit still".

The practice of sketching will improve your ability to see and draw. Developing a sketching habit is a *must* for a student of art. As part of your schedule, you should set aside a few minutes every day for sketching . . . or set aside a part of each weekend to sketch from life.

Study the sketches on these pages and read the captions to learn about tools and materials, subjects, goals and techniques.

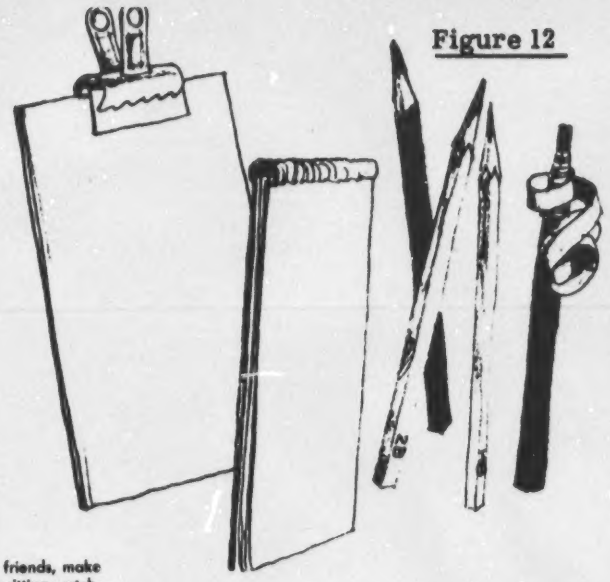


Figure 12

TOOLS & MATERIALS: Use an HB, 2B or grease pencil. Work in a sketch book or on any piece of scrap paper (typing paper is ideal) attached to a clip board.

SUBJECTS: Members of your family, or friends, make excellent subjects. People lying down or sitting watching TV will give you time for more involved sketches. People at a bus or train depot, or a park may also provide good subjects.

PENCIL DRAWINGS

(This Art Instruction page illustrates the tool, the textures it can create, and illustrations using varied techniques with that tool.)

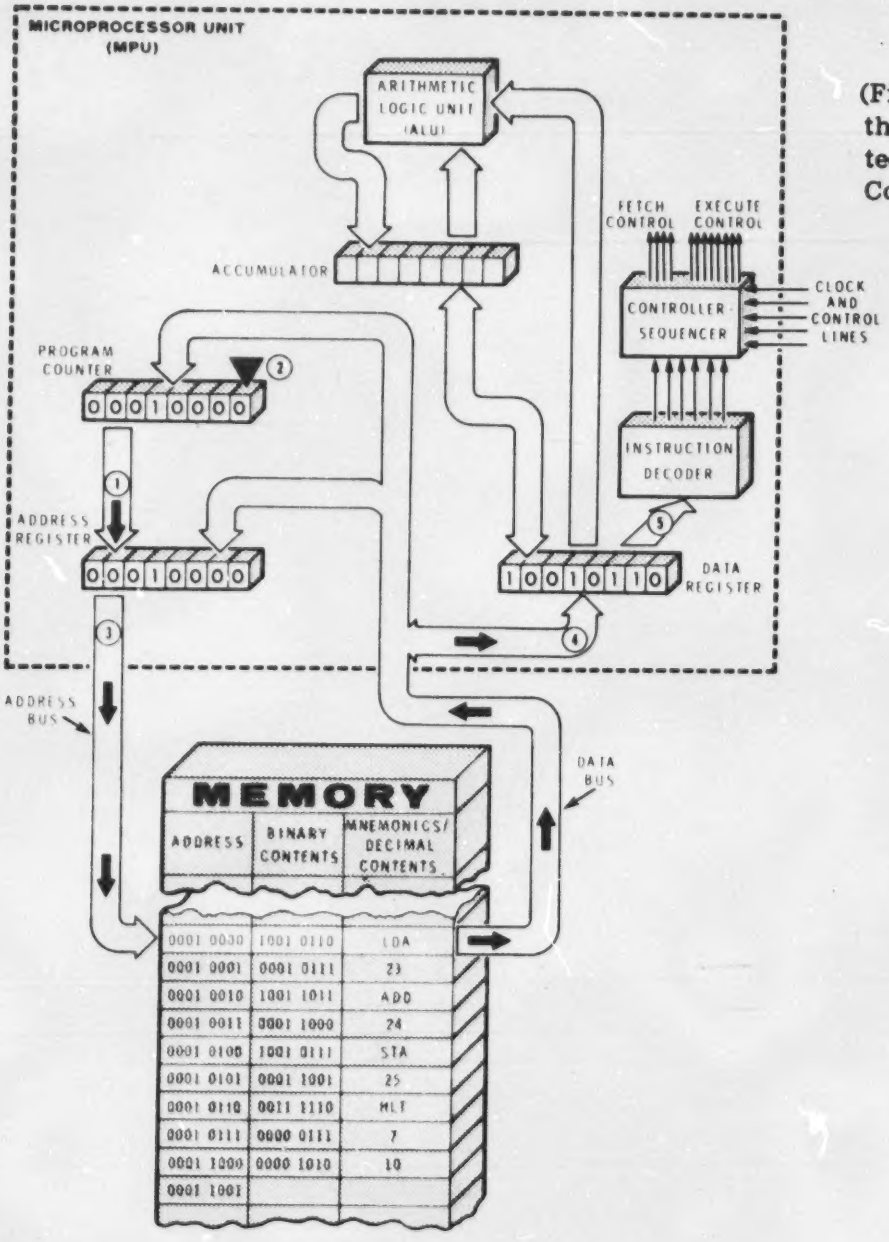


Figure 2-30
Fetching the Opcode of the First Instruction.

Figure 13

(Figures 13 and 14 are spreads that illustrate two diagraming techniques used by Heathkit Continuing Education.)

Figure 14

CHARGING SYSTEM DIAGNOSIS (ELECTRO/MECHANICAL)

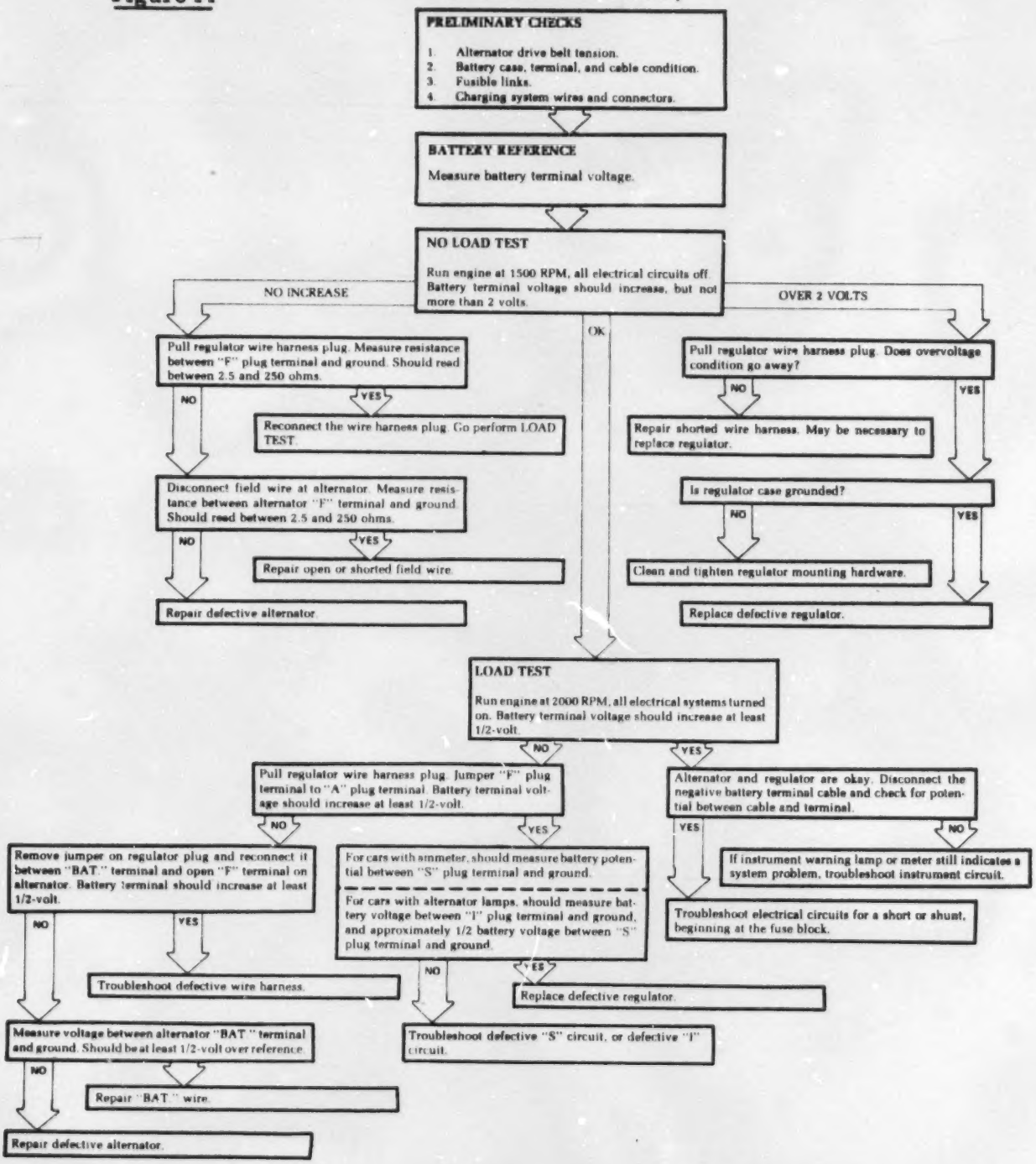

PRELIMINARY CHECKS
1. Alternator drive belt tension.
2. Battery case, terminal, and cable condition.
3. Fusible links.
4. Charging system wires and connectors.
BATTERY REFERENCE
Measure battery terminal voltage.
NO LOAD TEST
Run engine at 1500 RPM, all electrical circuits off. Battery terminal voltage should increase, but not more than 2 volts.
NO INCREASE
OVER 2 VOLTS
OK
Pull regulator wire harness plug. Measure resistance between "F" plug terminal and ground. Should read between 2.5 and 250 ohms.
YES
NO
Reconnect the wire harness plug. Go perform LOAD TEST.
Disconnect field wire at alternator. Measure resistance between alternator "F" terminal and ground. Should read between 2.5 and 250 ohms.
YES
NO
Repair open or shorted field wire.
Repair defective alternator.
Pull regulator wire harness plug. Does overvoltage condition go away?
NO
YES
Repair shorted wire harness. May be necessary to replace regulator.
Is regulator case grounded?
NO
YES
Clean and tighten regulator mounting hardware.
Replace defective regulator.
LOAD TEST
Run engine at 2000 RPM, all electrical systems turned on. Battery terminal voltage should increase at least 1/2-volt.
NO
YES
Pull regulator wire harness plug. Jumper "F" plug terminal to "A" plug terminal. Battery terminal voltage should increase at least 1/2-volt.
NO
YES
Remove jumper on regulator plug and reconnect it between "BAT." terminal and open "F" terminal on alternator. Battery terminal should increase at least 1/2-volt.
NO
YES
Troubleshoot defective wire harness.
Measure voltage between alternator "BAT." terminal and ground. Should be at least 1/2-volt over reference.
NO
Repair "BAT." wire.
Repair defective alternator.
For cars with ammeter, should measure battery potential between "S" plug terminal and ground.
For cars with alternator lamps, should measure battery voltage between "I" plug terminal and ground, and approximately 1/2 battery voltage between "S" plug terminal and ground.
NO
YES
Troubleshoot defective "S" circuit, or defective "I" circuit.
Replace defective regulator.
Alternator and regulator are okay. Disconnect the negative battery terminal cable and check for potential between cable and terminal.
YES
NO
If instrument warning lamp or meter still indicates a system problem, troubleshoot instrument circuit.
Troubleshoot electrical circuits for a short or shunt, beginning at the fuse block.

TABLE 6-1

34. cont'd.

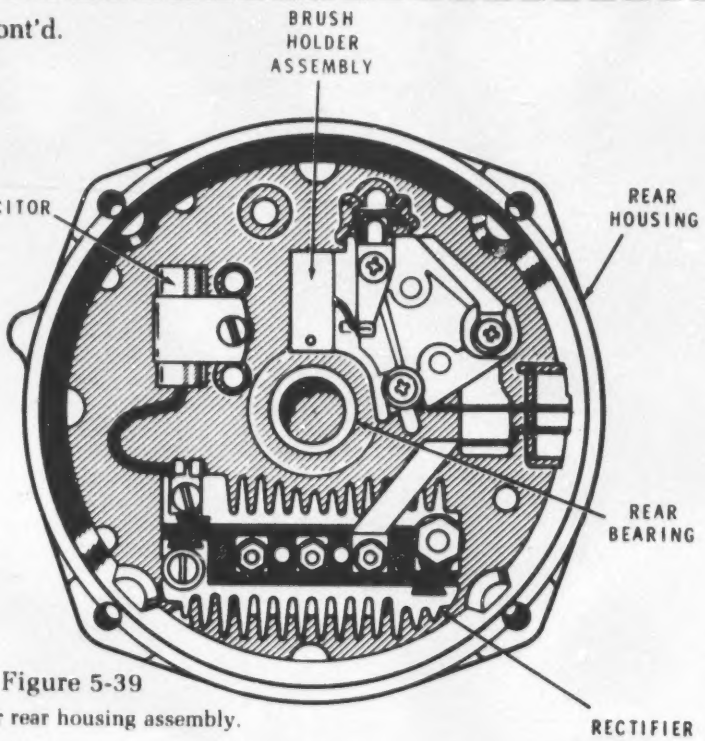


Figure 5-39
Alternator rear housing assembly.

as Figure 5-40 shows, the stator is fitted to the rear housing, and the leads connected to the rectifier terminals.

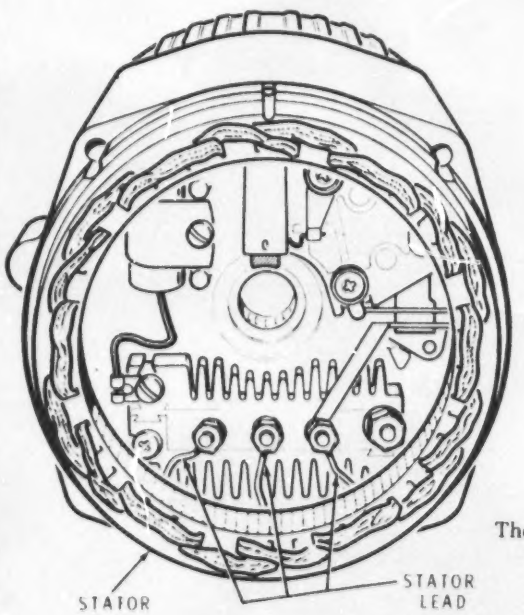


Figure 5-40
The stator assembly is mated to the rear housing.

cont'd.

Figure 15

(This page from Heathkit Continuing Education illustrates the advantages of calling parts off by name. Note how parts are readily identifi without reference to a table.)

292

eleven

Managing Course Production

Ronald D. Clark

Introduction to Article

Educators, particularly home study educators new to their positions, are not generally trained in the art of printing and text production.

Mr. Clark leads us through the fascinating and sometimes confusing world of printing and text production with a deft hand. Speaking from over three decades of home study experience, he takes us step-by-step through the text production maze.

Managing Course Production

Ronald D. Clark

Your school's Editorial Unit has just handed you a course manuscript and told you to have it printed. Ergo: you are instantly a Production Manager.

Very often it is not quite so simple as that. If you are a part of a school that has few course offerings, you may have just finished the editorial process yourself. In that case, you are not only an editor, but a Production Manager as well. It is obvious, though, that there is a delineation of function, and it is the function of the Production Manager that we will discuss in this article.

WHAT DOES THE PRODUCTION MANAGER DO?

The Production Manager is concerned with format, layout, types of illustrations, pagination, type style, selection of stock, text bulk, method of printing, type of binding, scheduling, and receiving the finished texts. He also knows his printers and their capabilities. Finally, he should know how to spec production jobs to potential printers so that they can give him suitable and relevant bids.

To follow through a printing job from the time the manuscript is submitted to the Production Manager, it is best to take each of the steps in more or less the order in which it is accomplished.

FORMAT

Formats of texts, lessons, and study guides, as well as the format of special jobs are most often determined and agreed upon by the educational staff, the marketing staff, and the editorial staff. Thus the Production Manager is aware of what the finished text should look like in terms of size, cover, binding, and overall design.

He should not have to decide these format characteristics. However, sometimes he receives little guidance, and therefore has to consider them. When the Production Manager makes these decisions, he considers text size (i.e., 8½ x 11", 6 x 9", etc.). Then he considers the basic layout. This means he determines column width, number of columns per page, and have at least some idea of how the illustrations will be placed on the pages.

The Production Manager will then select the type faces, and decide which style and size of type to use. He will consider size for main headings, shoulder headings, and the text material itself, as well as the legends for illustrations.

The printer should be consulted and the Production Manager should know what fonts he has on hand. If a type face is specified, and the printer does not have that particular font, the printer will have to obtain that type font. This is expensive, and for this reason it is frequently preferable to consider using type already on hand, if this is acceptable and in any way possible.

Once these decisions are made, the manuscript will be marked accordingly (see Appendix A for Proofreaders' marks). Now the manuscript is ready to go to the printers for bids.

Bidding on each individual job is not usually done, because most schools do business with a limited number of printers, and have rates which the Production Manager is accustomed to. Furthermore, sometimes the printing is done in-house, and the production is somewhat captive. Even so, the alert Production Manager will be checking printers on a continuing basis, and by doing so will attempt to get acceptable work at the best possible price. This is not to say that the lowest price is always selected; quality and dependability of finished product and acceptable delivery schedule must be suitable to the school's needs.

THE PRODUCTION PROCESS

Let us assume that the printer is selected, the manuscript all ready to go to the printer, and the various production processes are agreed upon. The manuscript is delivered to the printer.

A short time later the printer will return the manuscript to the Production Manager, along with galley proofs of the typeset material. He will then examine the proof sheets to make sure that the text has been completely typeset. Then the galleys and the manuscript will be returned to the Editorial Unit for proofreading. Proofreading is not the function of the Production Manager.

After the galleys are proofread by the Editorial Unit, they will be returned to the Production Manager. If there are numerous corrections, which there should not be, it may be necessary to send the galleys back to the printer to have major corrections made. If this happens, corrected galley sheets will be required, and the proofreading repeated.

When the galleys are satisfactory, the Production Manager will commence paging the book. He will cut the galleys and fit the type to the predetermined format. Illustrations, tables, and other graphics must be considered and allotted the proper amount of space. It will be necessary to work with the Editorial Unit to assure that the illustrations are properly placed so that they will be in the best possible proximity to the text material which refers to them. Sometimes, due to the amount of space allowed, this is not possible. In these cases the editors should make the final decision of placement of illustrations.

A word about illustrations: all illustrations, including art work, photographs, tabular material, and the like, must be furnished to the printer in a condition which will lend readily to reproduction. Line drawings should be precise. Glossy photos should be furnished. Illustrations to be shown in half tones should be prepared so they show exactly what is desired. In the event that four-color illustrations are mandated, good, clear photos should be furnished. Desired size of the illustrations must be clearly specified. Particularly in four-color work, color separation must be done to a predetermined size, since photographic reduction is impossible once the separations are completed. Tabular material should be laid out carefully, and careful instructions given to the printer as to how such tables are to be set. The printer can vary the size of the finished printing in line drawings, halftones, and photographs which will be printed in black and white. Graphs

are best supplied in a finished condition, so they can be produced photographically. You can easily see that some artistic capability is needed to get a desirable quality of illustrations.

It is important to remember that the legends, figure numbers, and the like, must be placed in the correct position so that such graphics are identified.

It may seem too elementary to mention that the odd-numbered pages are always on the right, while even-numbered pages are on the left. A right-hand page is called a *recto;* a left-hand page is called a *verso*.

Back to the printer again. He will make any noted corrections, and will now set up the pages as indicated by the Production Manager. If necessary, he will produce a "page poof," which will show exactly how the finished book will appear, without the illustrations. However, the locations where illustrations are to be placed will be blank.

Page proofs are examined by the Production Manager. This is his final opportunity to make copy changes without drastic expense.

We mentioned that the printer may furnish page proofs. Sometimes the Production Manager will opt to eliminate this step, and go directly to a "blueline."

The blueline is a true copy of the finished book, except that everything is shown in a single color, most often blue ink. Illustrations are in place. Pagination is completed and pages are numbered. The index (if any) carries the proper page references. Whether a page proof is seen or not, the blueline is the very last chance to make any changes. A word of warning: changes on the blueline are quite expensive, since everything should be "ready to go."

SELECTION OF PAPER STOCK AND COVER STOCK

When the blueline is approved by the Production Manager, the book is ready to print. By this time, the Production Manager has finished his work except for two things -- selection of stock and method of binding.

In selecting paper stock, the Production Manager must go to the printer or to this paper supplier. Samples of various stocks are available, and from these a selection will be made. Attention will be paid to the color

of stock, type of finish, weight, opacity, bulk of stock, and general appearance of the stock. A bulky stock will make up into a book which is thicker, and appears bigger. Naturally, a light-weight paper stock will cost less to mail. This is an important factor in these days of high mailing costs. But if the paper is too flimsy, there are press problems; the sheets will not feed well and printing costs may be higher. Be very alert to check for opacity, since bleed-through of print and illustrations is undesirable. In particular, illustrations such as bar graphs, heavy halftones, and reproduction of photographs could show through to the extent that reading material or even other illustrations on the reverse are difficult to see.

The Production Manager must also specify the kind of cover stock to be used on the book. Sometimes self-covers (the same stock as is used for the pages) are used. However, these tend not to hold up well. Most home study schools use a heavier stock.

To achieve the most attractive appearance for the cover, a coated cover stock is often preferred. Coated stocks are easier to keep clean and the cover design and type will appear sharper and more defined.

Usually hard covers are not used by home study schools which prepare their own text material. They are simply too expensive. However, if the texts are to be used by the student for referencing, hard covers will keep better and last much longer. Hard covers are most often cloth-bound, whereby a cloth surface is glued to a hard cardboard cover material.

BINDING

The type of binding also has to be determined and specified to the printer. Many home study schools furnish binders with loose-leaf pages. If this is what is used at your school or is what you would like to use, you have to specify page size and where the papers are to be drilled and the number of holes to fit your binder.

It goes without saying that ring binders with loose-leaf pages provide a flexible way to make revisions without the necessity of redoing the whole text. This can be a distinct advantage. If, however, the subject content is basic and relatively stable, the need for less frequent revisions tends to mitigate this advantage. Another consideration in using ring binders is their expense; an attractive, long lasting binder is rather expensive.

Many home study schools prefer to use a lesson unit that covers one topic or a series of closely related topics in one lesson. If the book consists of not more than 100 to 120 pages, saddle stitching is an ideal binding mode. It is likely to be the most economical way of binding a textbook, and produces an attractive product. Keep in mind that when a book is prepared the pages are folded, collated, and saddle stitched, it is necessary to trim the edges. The inside pages will have more paper trimmed than the outside ones, and this must be considered when margins are set up.

When books exceed the number of pages that are conveniently saddle stitched, other types of binding should be considered. A "perfect" binding is sometimes used. In this process, single pages are glued, either with or without a cloth backing strip, and the cover is stripped on. Then the books are locked into a press and pressed until the glue is set and the backs of the books are squared.

Perfect binding has the advantage of economy and is used on the majority of mass-produced paper-back books. The greatest disadvantage is that the backing breaks during use, and the pages become detached, either as single pages or groups of pages. This creates a disadvantage if the books are to be maintained as reference material, since pages are often lost.

Higher quality books use a stitched binding. The pages are in signatures, that is, a number of pages are printed all at once on one large sheet. The sheets are folded into book size, and each one becomes a signature. Several signatures are included in one book. The signatures are stitched together on a stitching machine. Then glue is applied to the back, or spine, and a cloth strip is applied. The cloth strip is often wider than the thickness of the book, so that it can be bonded to the cover stock. After the cover is stripped on, the books are placed in a press. This not only allows the glue to be impressed so that it will hold, but pressure also gives the book the characteristic shape of its back. You can notice on a book of this type that you can slip a pencil or a finger down inside the spine of the book between the cloth strip and the book cover.

This process is referred to as Smythe stitching and as you will guess, it is more expensive than the other processes. But the books make a very attractive appearance, do not break so readily at the spine, and last much longer.

Another form of securing the books is to drive staples through the pages or the signatures, then stripping a tape backing on the spine, extending over to the cover. Books bound in this way will not lie flat, which makes it necessary to hold them open when reading.

REVISIONS

Revisions of existing texts often require a different handling than do completely new books. Since only parts of the texts, and perhaps some illustrations are being changed, the Production Manager can save money by keeping whatever material doesn't need to be changed.

When the revisions are amended to existing material, and where placement of the new material need not be in any given sequence, it may be possible to just add pages at the end of the book. Unfortunately, this condition does not apply very often. Therefore, the revisions must be carefully planned to limit the amount of existing type which must be reset.

Pertinent to this, where the revised copy is in addition to the text material and must be placed within the body of existing copy, the revisions will have to go to the typesetter, be typeset, and the galley proofs furnished to the Production Manager. He will then fit the new material into the book at its proper place. This will require cutting pages and making a new page layout.

If this happens, the printer will have to take the existing flats apart and remake them, inserting the new into the old. This means, too, that page numbers have to be changed. But the costs of resetting existing type will be minimized.

On the other hand, new material may replace existing material. Once the new copy is set, it sometimes can be fitted into the space of the old copy. If repaging is to be avoided, the match must be very close.

Here the Production Manager will have to work closely with the Editorial Unit. They can help by decreasing or increasing the new material furnished by means of editorial changes. Sometimes illustrations can be changed in size without lessening the value of the illustrations. A good deal of bother and expense can be avoided if you don't have to require changes in all of the printer's flats.

Sometimes where revisions are numerous and scattered throughout the textbook, it is desirable just to set new type for the entire project. If there is a difference between new and old type, it will have to be completely reset.

SCHEDULING

The responsibility for scheduling is shared by many people. The Editorial Unit should determine a target date to place new texts or revisions into use. Inventory Control will inform everyone of existing stock and when it will be exhausted. The Production Manager will know from both sources when he has to have the required course material ready. Now he can set up his schedule. Appendix C is a sample schedule.

The Production Manager will work with his printer to set up time schedules for each step. Naturally, the printer will know his own schedule and capability for accomplishing every part of the job.

The following shows a type of schedule for each job. This can be charted on a control sheet or board so that each step can be recorded.

I. Date of receiving the manuscript from the Editorial Unit.

II. Date and time at which the manuscript is checked, marked-up, and delivered to the printer.

III. Number of days required by the printer to typeset the copy and date upon which galley proofs will be returned to the Production Manager.

IV. Number of days required for proofreading, and the date upon which the proof sheets are returned to the Production Manager.

V. Number of days allotted to the Production Manager for layout and paging the book, using the galleys and the date upon which the pasteups are returned to the printer.

Note: If a second galley proof is required, this will alter the schedule in mid-process. Therefore it is wise to have some elasticity in the schedule.

VI. Date upon which page proofs are delivered to Production Manager by the printer.

VII. Date that approved page proofs are returned to the printer.

VIII. Date that the blueline is available from the printer for final approval.

IX. Date when the blueline is returned to the printer. If specs on paper stock, cover stock, and method of binding have not been given, they must be given now.

X. The time allotted for the press run, collating, binding, trimming and packaging, and the date the job is to be delivered. (This must be worked out with the printer.)

Through experience the Production Manager will know exactly how his printer operates, and from time to time he will recognize that time schedules can be shortened, or lengthened. He can assist the printer in any case by increasing lead time whenever it is possible, or especially when it is essential.

Knowing the schedule for each step, and the projected delivery date, the Production Manager can assist Inventory Control in setting realistic low points (or re-order points) for stock in inventory. That way adequate time is available for replenishment.

It is also true that when format, paper stock, and cover stock are predetermined, the printer will be in a position to have the stocks on hand. Even though the selection of stock is discussed in this presentation following approval of the blueline, it is best to have this done considerably before this time. In this way the printer will not have to lose time waiting for stock.

There is a final word of caution on maintaining realistic schedules. If the Production Manager is for any reason delinquent in delivering material to the printer to meet his desired schedule, only two uncomfortable alternatives are open. The first alternative is to wait. In the home study field, this is often unacceptable; it is vital to keep students supplied with work. Then comes the second alternative: authorize the printer to use overtime to make the deliveries on time. Who pays the additional cost of overtime? The customer, of course. Naturally, this should be avoided.

CONCLUSION

Although production sounds a bit formidable, it really is not. The process is logical. Good planning, plus communication between the Production Manager, the Editorial Department, the Inventory Control Section, and the Printer, are the main factors in making a success of Course Production. The appendixes on the following pages illustrate some of the important terms and principles we have discussed.

APPENDIX A

PROOFREADERS' MARKS

dele or ℌ or ℌ (L *dele*) dele *or* delete; take out or expunge

take out a letter and close up

‿ print as a ligature; thus, a‿e (i. e., print æ); also, close up

∨ *or* ⌣ less space

⁀ close up entirely; no space

ɔ turn a reversed letter

^ *or* > caret; insert at this point the marginal addition

or # space or more space

Eq # space evenly—used in the margin

⌊ *or* ⌜ *or* [carry farther to the left

⌋ *or* ⌝ *or*] carry farther to the right

⌜ elevate a letter or word

⌞ sink or depress a letter or word

□ em quad space; or indent one em

$\frac{1}{m}$, |—|, $\frac{1}{em}$ *or* |‾| *or* $\underline{em}$ one-em dash

|| straighten ends of lines

≡ *or* /// *or* \\\ straighten a crooked line or lines

⊥ *or* ⊥ push down a space which prints as a mark

× *or* + *or* ⊗ broken or imperfect type—used in the margin

¶ make a new paragraph

○ (a ring drawn around an abbreviation, figure, etc.) spell out—used in the text

(sp) spell out—used in the margin

⊙ period

, *or* ,/ comma

: *or* ⊙ colon

;/ semicolon

' apostrophe or single closing quotation mark

" double closing quotation mark

' inverted comma or single opening quotation mark

" double opening quotation mark

=/ *or* -/ hyphen

[/] brackets

(/) parentheses

wf wrong font—used when a character is of a wrong size or style

ital put in italic type—used in the margin with ____ under text matter

rom put in roman type—used in the margin with _____ under text matter

bf put in boldface type—used in the margin with ~~~~~ under text matter

⌜⌞ ⌟ transpose

tr transpose—used in the margin

lc lowercase—used in the margin with a slanting line drawn through the letter in the text

= *or* sc *or sm caps* put in small capitals—the double lines drawn under the letters or word

≡ *or caps* put in capitals—the triple lines drawn under the letters or word

ld insert a lead between lines

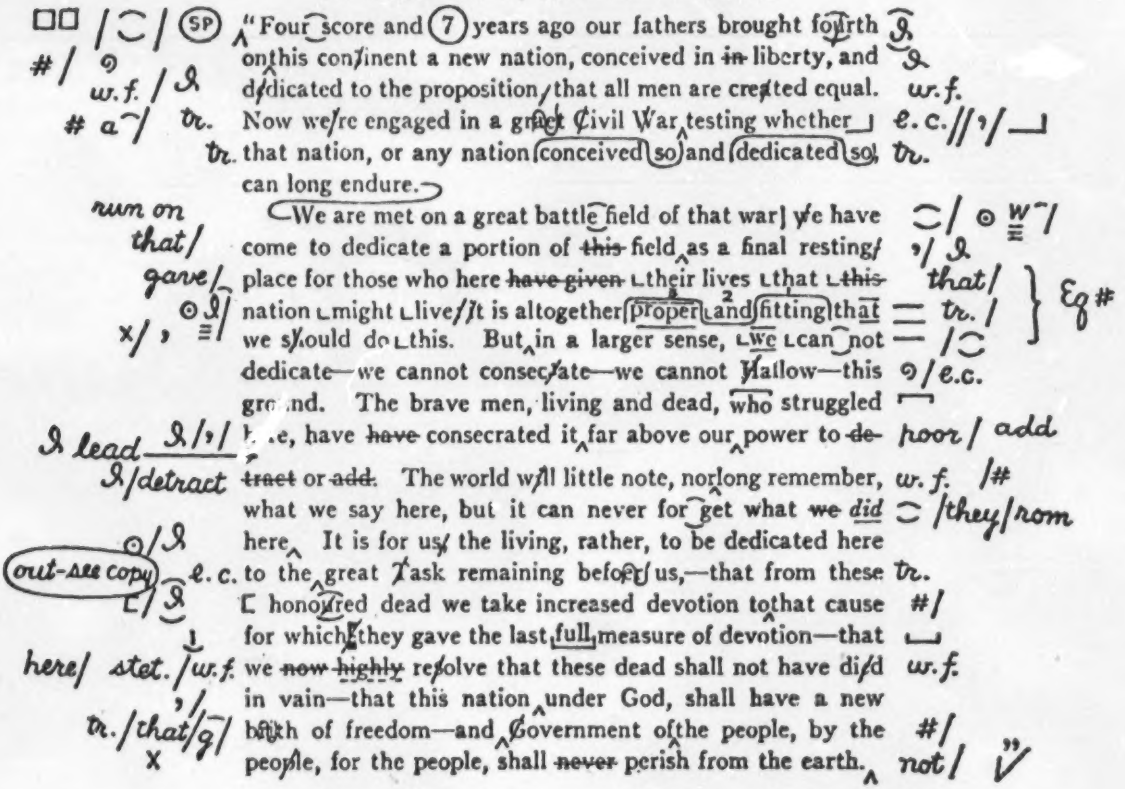
stet restore words crossed out—usually written in the margin (with dots under the words to be kept)

∨ set as a superscript; thus, $\overset{3}{}$ (i. e., print ^{3})—used in the margin

^ set as a subscript; thus, $\underset{3}{}$ (i. e., print $_3$)—used in the margin

? is this correct as set?—used in the margin

PROOFS OF LINCOLN'S GETTYSBURG ADDRESS WITH CORRECTIONS MARKED (*above*) AND MADE (*below*)



"Four score and seven years ago our fathers brought forth on this continent a new nation, conceived in ~~in~~ liberty, and dedicated to the proposition that all men are created equal. Now we're engaged in a great Civil War, testing whether that nation, or any nation so conceived and so dedicated, can long endure.

We are met on a great battle field of that war. We have come to dedicate a portion of ~~this~~ field, as a final resting place for those who here ~~have given~~ their lives that ~~this~~ nation might live. It is altogether fitting and proper that we should do this. But, in a larger sense, we can not dedicate—we cannot consecrate—we cannot hallow—this ground. The brave men, living and dead, who struggled here, have ~~have~~ consecrated it far above our power to ~~detract~~ or ~~add~~. The world will little note, nor long remember, what we say here, but it can never forget what ~~we~~ *they did* here. It is for us the living, rather, to be dedicated here to the great task remaining before us,—that from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion—that we ~~now highly~~ resolve that these dead shall not have died in vain—that this nation, under God, shall have a new birth of freedom—and that government of the people, by the people, for the people, shall ~~never~~ perish from the earth.

"Fourscore and seven years ago our fathers brought forth on this continent a new nation, conceived in liberty, and dedicated to the proposition that all men are created equal. Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battle-field of that war. We have come to dedicate a portion of that field, as a final resting place for those who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this. But, in a larger sense, we cannot dedicate—we cannot consecrate—we cannot hallow—this ground. The brave men, living and dead, who struggled here, have consecrated it, far above our poor power to add or detract. The world will little note, nor long remember, what we say here, but it can never forget what they did here. It is for us the living, rather, to be dedicated here to the unfinished work which they who fought here have thus far so nobly advanced. It is rather for us to be here dedicated to the great task remaining before us,—that from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion—that we here highly resolve that these dead shall not have died in vain—that this nation, under God, shall have a new birth of freedom—and that government of the people, by the people, for the people, shall not perish from the earth."

APPENDIX B

GLOSSARY OF TERMS

binding	the cover and fastenings of a book
blueline	a photographic print of a printed text, usually produced with dark blue ink on light blue stock
cover stocks	a paper cover of a book, usually of heavier stock than that used for the pages. May also refer to hard stocks.
flats	the frames or devices which hold the negatives for offset printing. When printed and folded, a signature is produced.
font	an assortment of type all of one size and style
format	makeup of a book, as to shape, size and appearance
galley proof	a proof from type on a galley before it is made into pages
graphics	drawings which represent an object in two-dimensional forms; also representations by a graph
hard cover	the cover of a book made by using a hard cardboard stock covered with cloth, plastic or leather.
layout	arrangement of matter to be printed
legends	an explanatory list of the symbols on a chart or illustration
manuscript (ms)	the typed text of a book or document as opposed to a printed text
page proof	a copy of a book showing placement of all type, but no illustrations or figures
paging	setting the order of pages
pagination	paging and marking sequence of pages
paper stock	supplies of paper for printing
perfect binding	a process by which single pages are glued at the spine with a cover stripped and glued over the pages
saddle stitching	a process of binding a book by driving staples through the center of the spine and clinching at the center
self-cover	a book cover formed from the same paper stock as is used for the pages
signature	a group of pages which are printed on one sheet, then folded
Smythe stitching	a process by which book signatures are stitched together with the binding and cover secured with glue
specs	specifications
stapling	using small u-shaped wires driven through the pages of a book at the corner or at the spine
type style	face, size, and appearance of type

APPENDIX C - Sample scheduling chart

DATES

Text I.D. or number	MS recd from Editorial	MS checked marked up	MS to Printer	Galley proof recd fm.printer	Proofread* by Editor	P.M. layout & pasteup	Page proof from printer	Page proofs appr. ret. to printer	Blueline from Printr	Blueline to printr	Text Del.Dat
TT-27	Day 1	Day 2-3	Day 3	Day 8	Day 11	Day 12-13	Day 18	Day 22	Day 25	Day 26	Day 31-35

* If a second or subsequent proof is required, dates must be adjusted here and for balance of schedule.

NOTE: EVERY PRODUCTION MANAGER will work out a day schedule which exactly suits his requirements, time lapses, and printer capabilities.

twelve

Creative Course Packaging

David Dasenbrock

Introduction to Article

The task of designing an effective course package is often overlooked until it is almost time to enroll students. Early on in course development, the developer must begin planning a course package which protects materials in transit, creates a good first impression, and facilitates study progress.

Dr. Dasenbrock sets forth the principles of creative package design in this article, and states: "To the student, the course package represents the faculty, staff, and the physical plant of the school."

Creative Course Packaging

David Dasenbrock

CREATIVE COURSE PACKAGING

Home study is a unique educational delivery system in which the student never sets foot inside the school in which he is enrolled. The student's only perception of the school is what is conveyed through the material sent and the services that are rendered.

Prior to enrollment, the prospective student builds a mental image of the school from the promotional materials received. Upon enrollment, the prospect becomes a student and the first set of educational materials is sent from the school or left by a sales representative. This is the first meeting between the student and the school's educational materials, and it had better be a good one! How these materials are packaged may affect the ultimate profitability -- indeed survival -- of the school.

THE INITIAL PACKAGE

The initial package is crucial. It is the student's first contact with the school, and the package must convey to the student everything the school represents. The initial package should not be thought of as a package, but as the school itself. The student identifies with this package, not with the school hundreds of miles away. To the student, the package represents the faculty, staff, and physical plant of the school. It also represents what the student has purchased for his educational dollar, and the student deserves to receive a package which looks like

it was a worthwhile investment. Let's look at what a good initial home study package of materials should consist of, beginning with the outer "shipper."

All initial packages, except those left by sales representatives, should have an outer shipping carton. The purpose of the outer shipper is to protect the material inside. It should be made of heavy cardboard, and be able to withstand the well-documented abuses of the Postal Service or the United Parcel Service. Remember, the student has just enrolled and sent in a down payment to the school, and this is the first shipment of educational materials he receives. There is nothing more discouraging to new students than an initial package which is battered, beaten, or torn open with some of the material missing.

The outer shipper should clearly identify who the package is from. There should be no question in the student's mind that the package has come from his school. It should also contain a message, such as "Here are your study materials" to let the student know what is in the package. This can be done by printing directly on the outer shipper itself, or printing on the mailing label. It is often a very good idea to test mail your initial package before it ever gets sent to the first student. Pick some employee who has a relative some distance away from the school and mail the package to them, with special instructions to mail the package back to you without opening it. After such a round trip, you should have a good idea as to how the shipper will stand up and in what condition the package will be received by the student. The shipper should also contain instructions on how to open it without damaging the materials inside.

The instructional material should not be loosely packed within the shipper. Remember, this is the student's first impression of the school of his choice. Loosely packed, disorganized material may convey a disorganized school. It is of utmost importance that the student does not question his enrollment. This package must reinforce the student's decision to enroll. It must provide from the very first a positive emotional experience for the student.

THE STARTER KIT

Ideally, the outer shipper should only be a sleeve unit for protection of the inner package. The inner package or starter kit should contain everything the student needs to begin studying.

When the student removes the starter kit from the shipper, it should be designed so that it invites the student to open it. The starter kit could be in a briefcase, toolbox, or simply a well-designed cardboard box. The graphics should be designed with the philosophy of the school in mind. Perhaps a picture of the school, excerpts of the training kits, or a giant logo could be printed on the box. Although the cost of the box may be nominal, it should look expensive.

Upon opening the box, the student should be impressed by what he sees. The package should look like it's worth ten times its actual cost. Remember, the package is not just a bunch of books, lessons, or study materials; it is the student's school! The materials within the package should "flow" from the package in an orderly fashion.

The first thing the student should see when the package is opened is some type of welcome letter from the school. This welcome should be from the President, Director of Education, or the student's Instructor. It should be a personal welcome, addressing the student by name if possible, and indicating the course of study selected. Although a general welcome letter which could apply to several courses can be used, they tend to be impersonal. Remember, you are creating an image. A picture of the person writing the letter allows the student to identify with the person. The student then "knows" the President or Director of Education. The student can then recognize the individual should they ever meet in person, just as the student can recognize a classroom instructor.

Often a school may send out a welcome letter from the President by first class mail separately. This is a good idea, especially if the first set of study materials is not sent out immediately, or does not go by the most expeditious means. If a welcome letter is sent separately, another welcome from some member of the school staff should be in the starter kit.

The kit should also contain the student's handbook or instructions on "How to Get Started." It is essential from the student's standpoint and from the school's, that the student get started and submit the first lesson as soon as possible. The student handbook should outline in very concise language, tips on how to study, and what to do first. The handbook can also contain additional information such as how to get technical assistance, more study materials, or change of address forms. However, the "How to Get Started" section is the most important.

it. Such hardware or equipment need not be expensive, but should have the potential for arousing the curiosity of the student.

At the National Radio Institute, our starter package is called the NRI Achievement Kit. The box is made of white liner board with the McGraw-Hill and NRI logos on the cover, as well as a 4-color photograph of the school. The outer shipper is made of heavy cardborad and used to protect the Achievement Kit. We use the same Achievement Kit box for all courses, to keep the cost of separate packages down. However, the inside of each Achievement Kit is different, depending upon the student's course of study. The Achievement Kit shown is from our Appliance Servicing Course. Let's look at the basic pieces. Upon opening the lid of the Achievement Kit, the decision of the student to enroll is immediately reinforced by reading "You've chosen the right school" which is now printed on the inside top cover in place of the members of the staff. This seven paragraph statement reaffirms NRI's commitment to the student. The "Meet some members of your NRI staff" is an insert which is laid on top of the materials in each Achievement Kit. This insert is different for each NRI course. Although the same staff members may be pictured, the brief description about them is tailored to the particular course of study. Removing the staff photograph from the cover of the Achievement Kit has allowed us to personalize the staff for each course, as well as achieve a more economical package by having a uniform Achievement Kit for all courses.

The NRI portfolio is just under the pictures of the NRI staff. Inside the portfolio is the student's identification card, a welcome letter from the President of the school, envelopes for the return of examinations back to the school, a consultation form for requesting technical assistance, and change of address notices. Just under the portfolio are the student's first set of lessons. A bookmark is used to identify Lesson 1 which is packed on top. The lessons are 8½ x 11 inches. The portfolio is approximately 8½ x 14 inches. To prevent the lessons from shifting from side to side beneath the portfolio, two plastic molds are inserted, one on each side of the lessons. The molds are specifically designed to hold two pencils, a pen, and a small plastic container with a postage stamp for the first lesson. The entire Achievement Kit, lessons, portfolio, envelopes, pen, pencils, and identification card are color coordinated.

Remember, in the starter kit you should be building an image of the school. Regardless of the material provided, the student must feel that he or she is getting their money's worth. The starter kit reassures

the student that it was a wise choice to enroll, and that the course will be exciting and meaningful. The colors and graphics chosen for the package, the lesson materials, and anything else provided should be coordinated to convey to the student a totally unified educational package. The starter kit itself may be designed so that it can be used to store the educational materials when not in use. The more value the student receives in the starter kit, the more likely the student is to be satisfied with the instructional package and submit the first lesson.

SUBSEQUENT PACKAGES

Subsequent packages are not as critical as the initial package. However, it does not mean that the materials can just be thrown in a box. Again, the shipping container must be sturdy enough to withstand the punishment it will receive while traveling to the student. The materials can be packed directly in the shipping carton, without the use of an inner box. By the time the second set of study materials has arrived, the student has already formed an impression of the school, and subsequent packages can do little to alter this initial impression.

OTHER TIPS

Care must be taken to make sure that the materials are not free to move around inside the shipper. Such movement could damage the contents as well as the box itself. There are several ways to make sure the contents do not shift inside a shipping carton. The first is to have each shipping carton specifically designed for its contents. When done this way, the contents will fit snugly in the carton, and will not shift within the carton when handled. Of course, a standard carton is more economical. If a standard carton is used, additional packing material should be used in the carton to prevent the contents from shifting. An alternate method would be to use a piece of cardboard the size of the shipper, and then shrink wrap or skin the materials to the cardboard to hold them in place.

If envelopes are used to ship materials to the student, make sure the envelopes are constructed of a heavier grade of paper, to prevent them from tearing during shipment. Standard paper weights, such as 50 or 60 pound paper should not be used for shipping materials to the student. These envelopes are likely to tear open, especially if the contents are heavy. Standard size shipping envelopes constructed of heavier paper

are readily available. Envelopes which have padding or a lining are also easy to obtain. One type of shipper envelope to avoid is the rag content "jiffy bag." Upon opening, it usually explodes its fibrous matter and destroys any possible positive image. Best bet is to stick with bubble pack jiffy bags. Such envelopes are preferable for sending materials to the student to prevent damage. Again, test mailing each package is an ideal way to determine how it will travel from the school to the student.

KIT OR HARDWARE SHIPMENTS

Training kits and hardware are perhaps the most difficult items to package because the contents usually vary from one shipment to another. Also, hardware items are heavier than lessons and require a package of greater strength.

Again, the most important thing is to keep the contents in the carton from shifting during shipment. Often, small components such as electronic parts can easily be damaged if they are allowed to bounce around and bump against each other during shipment. To prevent damage, components should be packed in such a manner that they cannot move within the package. Perhaps the best way to do this is to "skin down" the parts on a piece of cardboard. If done with a little bit of thought and ingenuity, an appealing visual display can be created which will not shift in shipment and will leave a very good impression on whoever opens the package. The use of styrofoam or other types of packing material can also be used to fill the void space in the container.

The cost of increased packing material may only be a few cents, but the cost of replacing damaged parts or components may be many dollars. Not only is there the cost of correspondence with the student when the damaged shipment arrives, but there is also the potential for a dissatisfied student and perhaps even a cancellation.

THE BOTTOM LINE

The future survival of any home study school rests with the school's ability to satisfy its student body. No greater satisfaction comes to a student than the achievement of satisfactory grades and the shipment of new materials in satisfactory condition. A school's integrity can be called into question by the student when materials start arri ving late,

haphazardly, or in poor physical condition. Frankly, there is no excuse for poor packaging of courses today. The expense of designing and using first rate packages is not prohibitive for any school. There is even less excuse for unimaginative, demotivating packages, since there is a readily available source of hundreds of creative packaging ideas around. Most of them are available at nominal expense. Each package sent to a student should be considered as an integral part of a total educational program.

thirteen

Completion Rate Studies

Kenneth E. Whittington

Introduction to Article

Course developers and Directors of Education new to their jobs usually come to a quick appreciation of one of the facts of "home study life": not every student who enrolls in a course will finish it. Knowing how to calculate the accepted course completion statistics is an important skill.

Mr. Whittington describes the various definitions, provides completion rate examples, and even gives the reader a quiz. Understanding how to calculate completion rates is one of the first steps in coping with the age-old question of how to encourage students to complete their courses of study. These completion rate formulas are required to be used in NHSC Accrediting Commission evaluation reviews of institutions seeking accreditation. Every home study school will want to maintain quarterly -- or even monthly -- course completion data.

Completion Rate Studies

Kenneth E. Whittington

COMPLETION RATE STUDIES

Course developers need to understand the proper methods of working formulas for calculating completion rates for home study courses. Knowing how to do a completion rate analysis is but another skill course developers must have at their disposal, for it aids in course design.

You may be wondering why we would be concerned with completion rates in a handbook primarily devoted to course development. Let's start by asking the question, why are we developing a new course? Obviously your school has performed a marketing study to determine a need for the course. As Director of Education, the chore of research and developing the course is placed in your hands. You also know that your department can add to the profitability of your school if the course is successful. By what better method can we determine if a course is successful than by measuring student progress within the course? Proper calculation of completion rates is the key method for measuring. It should be done for each course at least twice each year to determine various trends.

If your school is accredited or applying for accreditation, part of the accrediting standards mandate calculation of student progress. The Accrediting Commission will ask the school to present data from an adequate statistical study of students' records which will show the lesson, the number completing through several specific points in the course, the exact number of assignments completed, and the percent of students completing the course. A copy of the Accrediting Commission's

Document 4.1.1 entitled, "Instructions for Studies of Student Progress" is enclosed as Exhibit B for your reference.

What makes a student discontinue his studies? It is an age-old question, but one that a Director of Education must address every day. I have found that the highest number of student responses to this question involve personal reasons. The second most frequent response involves financial reasons and third, "they don't have the time."

I have drawn my own conclusions through research and persistence as to the exact reasons students drop out of educational courses. Actually, there are three major causes students drop out: poor educational materials, poor servicing, or poor student communications.

If a school can keep a student as motivated through the course as he or she was when they registered with your school, you can increase your completion rates tremendously. By keeping a close watch on completion rates and student progress through the course, trends can be detected and dealt with. We have 40 lessons in our truck driver course. Beginning with lesson 25, our home study course covers and Federal Bureau of Motor Carrier Safety Regulations. There are seven continuous lessons dealing with rigorous regulations. Through student progress studies I was able to detect a high percent of drop outs starting with lesson number 25. In our revisions, I am redesigning the course so that the regulations are taught in a more desirable language and are more evenly spaced throughout the course instead of all seven lessons together.

This is the only one example I can share with you concerning the necessity of adequate completion studies. I could cite many more that would have remained unnoticed without the results of the studies. Stop and think: have you recently discontinued doing business with a vendor you have been purchasing from on a regular basis? Why did you discontinue? For personal reasons? I doubt it. It probably had something to do with the product or the servicing, or perhaps poor communications. I have a good friend who has boycotted a major retail store for over ten years. He purchased a lawn and garden tractor for $750.00. Shortly after he purchased the machine, he called the service department to perform some work that came under the warranty. The service manager told him the warranty would not cover the repairs, which was not true. My friend became so angered that he returned the machine and never returned to the store. To this day, he tells his story to everybody he meets in hopes that they will refrain from buying at

that store. The company tried on several occasions to right the wrong that had been done, but to no avail. It was too late. Perhaps a large national retail store can afford to loose customers. In most cases we can't. Remember, our student "customers" usually buy from us one time.

DEFINITIONS

Let's begin our learning process by understanding the definitions of some terms we will be using in making our discussion of completion studies.

Completion Rate: The ratio of assignments completed to the total number of assignments contracted for in a sample of enrolled students (note: not the same as graduation rate). To further interpret this definition, if there were 40 lessons in your course, a student completed 20 lessons and no more, the student completed 50% of the course. If the student completed all 40 lessons, but did not meet the school's grading standards in lesson 5, 10, and 15, the student completed 100% of the course but did not graduate.

Enrolled Student: A person who has made the required tuition payment, has been accepted by the school and has been sent his first instructional materials. Enrolled students are those who have not elected to cancel by means of cooling-off rules or by failing to reaffirm their enrollment (if required).

It is important for you to know that completion rates should be calculated using enrolled students only. If an application is rejected by your school for not meeting the entrance requirements or if the student elects to use cooling-off privileges, he is not an enrolled student and does not belong in your completion statistics.

Graduation Rate: The percentage of enrolled students in a sample of the schools course (or courses) who have satisfactorily completed all of the prescribed requirements of a given course.

Non-Start Rate: The percentage of enrolled students in a sample of a school's course (or courses) who did not submit any required examination or lesson assignment for grading or servicing. Non-Starts: Students who after becoming enrolled do not submit any of the required examinations or lesson assignments.

The Accrediting Commission has determined that the non-start student is considered an enrolled student and is a "revenue generating" student, and that non-starts who have not cancelled via cooling-off provisions must be included in determining completion and graduation rates.

SAMPLES: SIZE AND SELECTION

In our definitions, we have referred to "sample of students" several times. Since some schools could have thousands of students enrolled in a given course, it is necessary when calculating completion rates that a fair and just method of sampling be done. The "pick and choose" method will not accurately reveal the completion rate information you are looking for. Remember, to cheat on these calculations is only hurting you and your school. Faulty sampling leads to skewed data and, inevitably, to faulty decision making.

While there are several complex statistical formulas for determining sample sizes, there are no hard and fast rules or precisely how large the size of the sample must be in order to attain valid results. An acceptable sample size would be large enough to give statistical confidence in the analysis.

The key to effective sampling is the "randomness" of the sample: in a random sample of a student body, each enrolled student's name must have had an equal chance of being selected for the sample. The selection of names must be guided purely by chance. For example, selecting every 10th name out of a phone book would be a random sample of all names in that particular phone book.

To conduct a completion rate study for a home study school, no fixed size of sample is suggested. Medium and larger schools may want to use 500 or more names while smaller schools use a smaller sample or even use all students enrolled during an appropriate time period.

Care should be taken not to let the sample become selective. In an alphabetical or numerical list, to arrive at the desired sample, one might need to take every fifth, tenth, or fortieth name falling in the required enrollment period. Small samples from 100 to 500 names are acceptable, provided they are drawn on a truly random basis.

TIME FRAMES FOR SAMPLES

In computing completion and graduation rates, the sample should include only students who enrolled long enough ago to have had a reasonable chance of completing the course. If the course has changed little recently, include only students who have been enrolled for the entire period normally allowed to finish the course. If significant changes have been made, one can select a period of enrollment sufficiently far back to embrace at least 80% of those who have a chance to finish (i.e., if 80% usually finish within 18 months, one can select from those who enrolled on or before a period commencing 18 months ago). Non-start rates, of course, can be computed sooner, since after an initial period most of the non-starts will have been identified.

COMPLETION FORMULAS

Now let's look at the formulas used to compute the various rates. You may need your pocket calculator to keep up with us from here on!

1. Non-Start Rate

   Enrolled students who never submitted the first lesson divided by total of enrolled students in the sample.

EXAMPLE:

In a sample of 102 total students, 12 never submitted lesson 1 for grading. Of these 12, two had elected not to reaffirm under the G.I. Bill Ten Day Affirmation Provisions. The non-start rate is therefore:

$$\frac{10 \text{ (enrolled students)}}{100 \text{ (total)}} = 10\% \text{ non-start rate}$$

2. Completion Rate

   Total of lesson examinations actually submitted divided by total of lesson examinations which would have been submitted if all of the enrolled students (including "countable" non-starts) in the sample did 100% of their work.

Or if, for example, we note a trend in which lesson completion rates appear to be falling, we can take several correction steps: pinpoint difficult lessons or exams and revise them; survey students to ascertain any difficulties they have; review our marketing efforts to determine if the course is delivering what we have promised, etc.

Remember the three elements which cause students to drop out: poor course materials, poor servicing, and poor communications. Give your course a chance to succeed! Have your entire instructional staff communicate on a regular basis and on the same level with your student body. We must resell our students every day. So many educational directors believe that the "other guy" does the selling. In most cases, it's your product he is selling. Who should know more about that product than the people who developed it? Students must constantly be reassured that the decision to enroll in your school was the best decision they have ever made.

Document 4.1.1

EXHIBIT A

ACCREDITING COMMISSION
National Home Study Council

INSTRUCTIONS FOR STUDIES OF STUDENT PROGRESS

Item 27 in the Guide to Self-Evaluation can be restated as follows:

In answer to item 27, the school should present data from an adequate statistical study or sampling of student records which shows:

a. the number of enrollments in the sample
b. the percent completing the first assignment
c. the number completing through several specific points in the course
d. the average number of assignments completed
e. the percent of students completing the course

Do this for each of your major courses.

In regard to d above, in order to plot the graph called for on page 3, we suggest calculating how many finish successfully each successive tenth part of the course, e.g. how many sent in the first 10% of the total examinations in the course, 20%, 30%, etc. Other breaks may be more convenient in your course. Data should enable you to plot a graph somewhat similar to the one shown later in this document.

Suggested Method of Deriving Data by Use of Sampling

Size and selection of sample: No fixed size of sample is suggested. Medium and larger schools may want to use 1,000 or more while smaller schools may have to drop to smaller samples or even to a complete count. Care should be taken not to let the sample become selective. In an alphabetical or numerical list, to arrive at the desired sample one might need to take every fifth, tenth, or fortieth name falling in the required enrollment period. Small samples of 500 or even fewer may be acceptable provided they were drawn on a truly random basis and the percent of error recognized.

One should include only students who enrolled long enough ago to have had a reasonable chance of completing the course. If the course has changed little recently, include only students who have been enrolled for the entire period normally allowed to finish the course. If material changes have been made, one can select a period of enrollment sufficiently far back to embrace at least 80% of those who are going to finish (i.e., if 80% usually finish within 18 months, one can select from those who enrolled during a period prior to 18 months ago).

Tallying and Calculation: After the sample has been drawn, one needs to tally how many assignments have been finished (usually how many examinations have been sent in) and have received passing grades. The tally for a sample of 1,000 students in a ten-assignment course might look like this:

		Number of Students Progressing this far	Total Number of Exams sent in
Non-starts	---------	80	0
Credit for (but not 2)	1 Exam	130	130
	2 Exams	110	220
	3 Exams	103	309
	4 Exams	84	336
	5 Exams	65	325
	6 Exams	38	228
	7 Exams	16	112
	8 Exams	13	104
	9 Exams	14	126
	10 Exams	347	3,470
		1,000	5,360

In the sample 92.0% of the students (all but 80 of the 1,000) completed the first assignment.

If all enrolled students in the sample had done 100% of their work, 10,000 examinations would have been sent in. Instead, 5,360 were received. The typical or average enrollee went 53.6% of the way through the course. This is the completion rate of the course. (This definition was promulgated by the National Home Study Council's Research and Educational Standards Committee and issued in the NHSC LETTER of April 16, 1955.) This probably is the best single index of student progress. It can be a basis of comparison within the school as improvements are made from time to time. Many of the injustices of interschool comparison, however, are obvious.

In the sample, 34.7% of the students completed the course. (i.e., They did all the home studying required regardless of whether or not they took any "final examination", supervised examination, entered upon terminal resident training, qualified for certificates, or a diploma, etc. This figure should reveal what percent of the students finished the home study part of the course. If this figure includes resident study also, it should so specify. Where resident terminal training is offered, it is of interest to know what percent of the sample start and what percent of finish the resident portion of the course.)

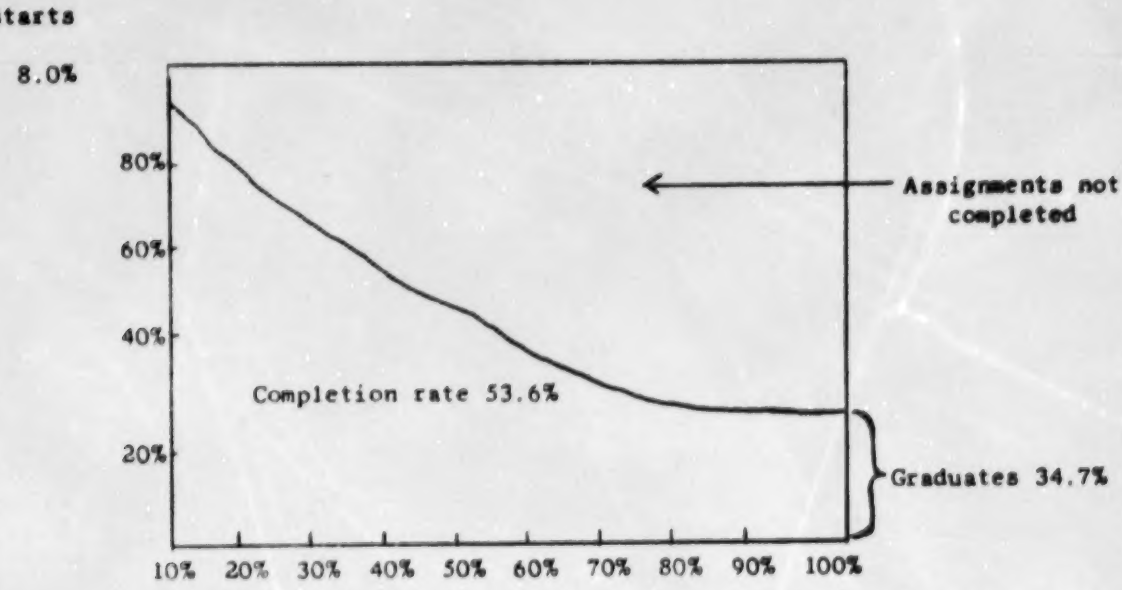
NOTE: The same base (a) is used for (b), (c), (d), and (e).

An enrolled student is one who has made the required tuition down payment, has been accepted, and has been sent his first instructional materials.

Similar studies should be made and reported for each different major course of field, e.g., high school, chemical engineering, accounting, traffic management, factory management.

STUDENT PROGRESS GRAPH

For each major course, prepare a line graph similar to the following showing student activity. The graph below shows the student progress of the example on the opposite page. The graph closely approximates the actual record of one accredited school.



Ten exams in course. Sample of 1000 students.

Interpretation:

8.0% non-starts
92.0% sent in first exam (starting rate)(also finished 1/10 of course)
79.0% finished 2/10 of course
68.0% finished 3/10 of course
57.7% finished 4/10 of course
49.3% finished 5/10 of course
42.8% finished 6/10 of course
39.0% finished 7/10 of course
37.4% finished 8/10 of course
36.1% finished 9/10 of course
34.7% finished entire course

Average percent of assignments completed: 53.6%

(This is the completion rate obtained from a tabulation of exams sent in by all students in the sample.)

EXHIBIT B

COMPLETION RATE QUIZ

To test your understanding of completion rate calculations, you may want to try your hand at this quiz. Answers to the quiz are at the end of this exhibit. You may write your responses in the spaces provided and check them against the correct answers.

A. Given: The following data apply to quiz items 1 through 3 below:

Total Enrollees in original sample: 1456
Enrollees cancelling via cooling-off: 16
Number of required lesson submissions in course: 30
Enrollees who never submitted a lesson: 144
Total number of lessons received for grading: 23,760
Number of enrollees who sent in all submissions: 576

1. What is the non-start rate? _____

2. What is the (lesson) completion rate? _____

3. What is the graduation rate? _____

B. Given: The following data apply to quiz items 4 and 5 below:

Enrollees for - 1980: 680 (January 1 - December 31)
1981: 920 (January 1 - December 31)
1982: 1,650 (January 1 - December 31)

The average time for the typical enrollee to complete the entire course is 10 months. Today's date is October 17, 1983.

4. Which of the following time periods should you select to get a good current sample for a completion study? (circle best response)

A. January 1, 1980 - December 31, 1980
B. July 1, 1981 - December 31, 1981
C. January 1, 1982 - December 31, 1982
D. January 1, 1982 - July 1, 1983

5. Which of the following would provide a reasonably acceptable sample size?

A. 50 enrollees
B. 100 enrollees
C. 500 enrollees
D. Either B or C above.

C. Given the following data for quiz items 6 through 9 below:

Non-start rate = 12%
Completion rate = 60%
Graduation rate = 35%
Sample size (no cooling-off cancellations): 700
Required lesson submissions in course: 15

6. In the survey above, how many non-start enrollees were there? _____

7. In the survey above, how many lessons were received for grading? _____

8. How many students finished the course (graduates)? _____

9. If, after the sample had been taken, an additional 1,050 lessons had been received for grading, what would the new completion rate be? _____

D. Given for item 10:

Non-Starts = 315
Total in Sample = 2,100
Non-Start Rate = 15%

10. If, after taking a sample, 63 of the non-starts submitted lesson one for grading, what would the new non-start rate be? _____

EXHIBIT B cont'd.

ANSWERS TO QUIZ

1. $\frac{144}{1440}$ = 10% non-start rate

2. $\frac{23,760}{43,200}$ = 55% completion rate

3. $\frac{576}{1440}$ = 40% graduation rate

4. D. Going back 18 months in time would provide a current sample. If the average student takes 10 months to complete the course, 18 months would allow most students to have completed.

5. D. Either B or C are possible sample sizes, provided both samples are truly random.

6. 84 non-starts (700 x 35%)

7. 6,300 lessons (10,500 x 60%)

8. 245 students graduated (700 x 35%)

9. 6,300 + 1,050 = 7,350 lessons

   $\frac{7350}{10,500}$ = 70% completion rate

10. 315 - 63 = 252

    $\frac{252}{2100}$ = 12% non-start rate

fourteen

Financial Analysis

James E. Godfrey

Introduction to Article

More than one excellent home study course has gathered dust on a warehouse shelf because it never reached its audience. Usually, such courses were inadequately or improperly promoted.

One key to assuring that courses are sold is to understand the complex inter-relationships between course price, volume, and profit analysis.

Mr. Godfrey explains the basic cost accounting principles which home study educators at both profit and non-profit schools must know in order to survive. He cautions that the formulas presented here are tools for analysis, not substitutes for judgment.

Financial Analysis

James E. Godfrey

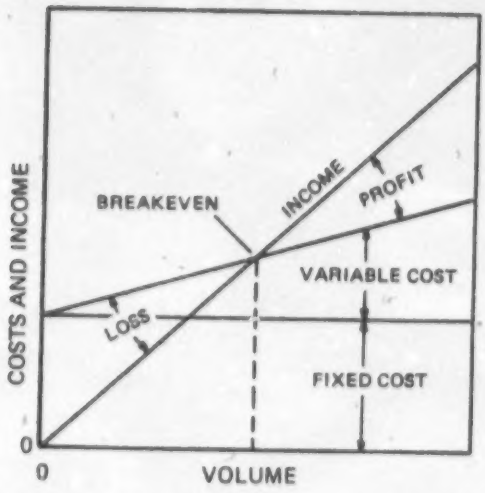
The Pricing Challenge. In managing the for-profit school, any new course offering inevitably brings forth the question of price: "What should the tuition be?" And, of course, there are these related questions:

-- What volume might we expect?
-- To what extent will price affect volume?
-- Where is the price sensitivity barrier?
-- And finally, will the course be profitable?

We're dealing with dynamic factors here, and with the inter-related impacts of price on volume, volume on cash flow, and cash flow on profits. Ideally, when dealing with a new course offering, the management can make calculated judgments based on the track records of similar courses. But such judgments require the availability of complete and reliable cost information. Properly sorted, such cost data can be projected for a new course offering. At this point, it would be well to name two kinds of tools for cost analysis:

1. Breakeven Chart for Cost-Volume-Profit Analysis
2. Analysis of Contribution to Profit and Absorption of Overhead

Here, in the simplest form, is a breakeven chart: Costs and income run vertically, volume runs horizontally. There are fixed costs, variable costs, a straight income line, and a breakeven point.



But before we dare get into a discussion about the use of either of these procedures, we must touch on several bases of cost accounting.

Fixed Expenses (or Fixed Costs). All combined, this is what it costs to "turn the key in the door each morning," the overhead costs that are not related to volume of production or services rendered. In the school business, this would include costs such as rent, depreciation, insurance, utilities, supplies, indirect labor, general expense and administration.

Variable Expenses (or Variable Costs). These are all costs that can be tied directly, on a per unit basis, to the volume of business conducted. For schools, the unit of volume is the enrollment. Included are freight, direct sales expense, and direct labor -- such as enrollment processing, lesson grading, records posting and motivational follow-up functions.

Semi-Variable Expenses. Costs cannot always be neatly pitched into the black and white bins. Gray areas are inevitable -- those costs that are influenced by changes up or down in volume, but don't change in a direct relationship. Advertising is one such example. However, on a breakeven analysis, there is no handy way to deal with semi-variables. Therefore, by arbitrary decision, compromise or whatever, all costs must be categorized as either fixed or variable. In the case of advertising, this type of compromise might lend itself to schools. Establish a base ad budget as a fixed expense, then assign a flat amount per enrollment -- thereby creating a variable expense (as well as some elasticity in the ad budget).

Contribution, or by its full title, Contribution to Profit and Absorption of Overhead. "What has this course done for me -- or my school -- lately? Contribution is a good measuring stick, and an easy one to use is:

Contribution = Price less Variable Cost

In school language, the contribution of an enrollment is what's left over after subtracting variable costs from tuition received. Take special note of the fact that fixed expenses are not involved. Contribution absorbs fixed expenses -- totally we hope, and money to spare then becomes profit.

Allocation. Allocation is the sharing of fixed expense by more than one profit center. Whenever a school offers more than one course, there should be some method of allocating equitable portions of the overall fixed costs. Such sharing of the burden might be done on the basis of sales revenue, floor area, payroll, or combinations thereof. The case examples that follow make use of an allocation based on sales.

Target Volume. This is my personal term for the targeted enrollment volume that will assure a comfortable profit margin.

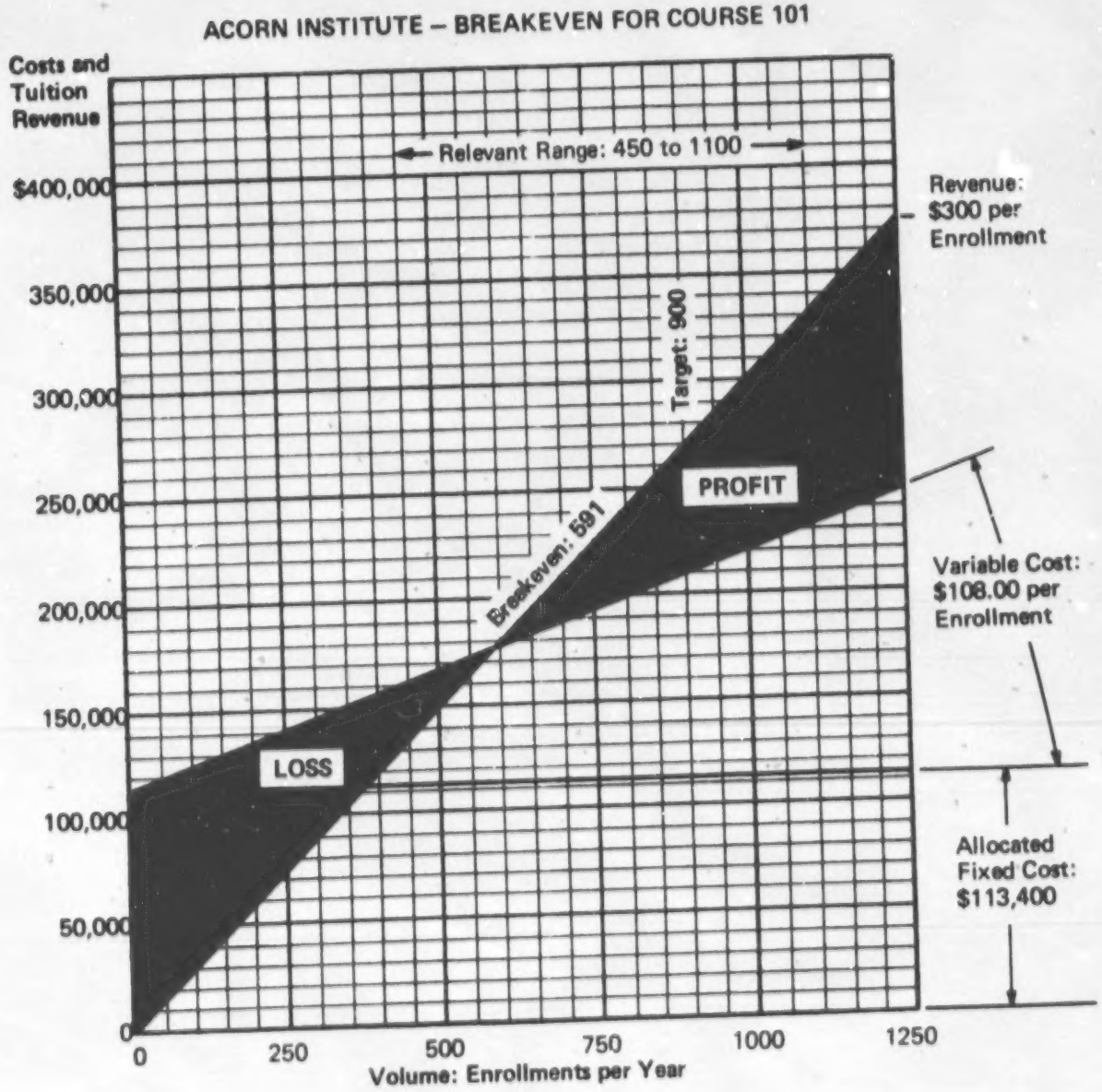
Relevant Range. In the real world, fixed costs quickly become unfixed by retrenchment to cope with a sales slump, or by expansion and hiring of indirect as well as direct labor to handle booming sales. To this extent, any breakeven chart must be qualified for the minimum and maximum enrollment levels that will be accommodated by the given of fixed costs. This setting of the range assumes that the management has in place a series of options for dealing with such ups and downs in volume.

So much for the basics. Now we want to demonstrate the use of breakeven charts and analysis for contribution. Acorn Institute, our case history school, offers two seasoned courses. They keep good cost records, and manage to make a profit. Here is the cost data for Acorn's two courses. Derived from that data, you'll see a breakeven chart for each course.

Acorn Institute: Data for Year Ended 12/31/78

Financial Data by Courses	Course 101	Course 102	Total
Full Tuition	$ 428.00	$ 615.00	
Average Revenue per Enrollment	300.00	400.00	
Enrollments, Year Ended 12/31/78	900	450	1350
Sales Revenue for Year	$270,000.00	$180,000.00	$450,000.00
Variable Costs:			
Variable Cost per Enrollment	$ 108.00	$ 168.00	
Variable Cost per Year (Variable Cost x Enrollments)	$ 97,200.00	$ 75,600.00	
Fixed Costs:			
Total Fixed Cost per Year			$189,000.00
Allocation:			
Course Sales to Total Sales	60.0%	40.0%	
Allocated Fixed Cost	$113,400.00	$ 75,600.00	$189,000.00
Combined Costs:			
Enrollments	900	450	1350
Variable Cost	$ 97,200.00	$ 75,600.00	$172,800.00
Fixed Cost	113,400.00	75,600.00	189,000.00
Total Cost	$210,600.00	$151,200.00	$361,800.00

Analysis of Contribution to Profit and Absorption of Fixed Cost	Course 101	Course 102	Total
Average Revenue	$ 300.00	$ 400.00	
Less Variable Cost	-108.00	-168.00	
Contribution per Enrollment	$ 192.00	$ 232.00	
Contribution per Year	$172,800.00	$104,400.00	
Allocated Fixed Cost	113,400.00	75,600.00	
Profit Contribution	$ 59,400.00	$ 28,800.00	$ 88,200.00
Profit, Percent of Sales	22.0%	16.0%	19.6%

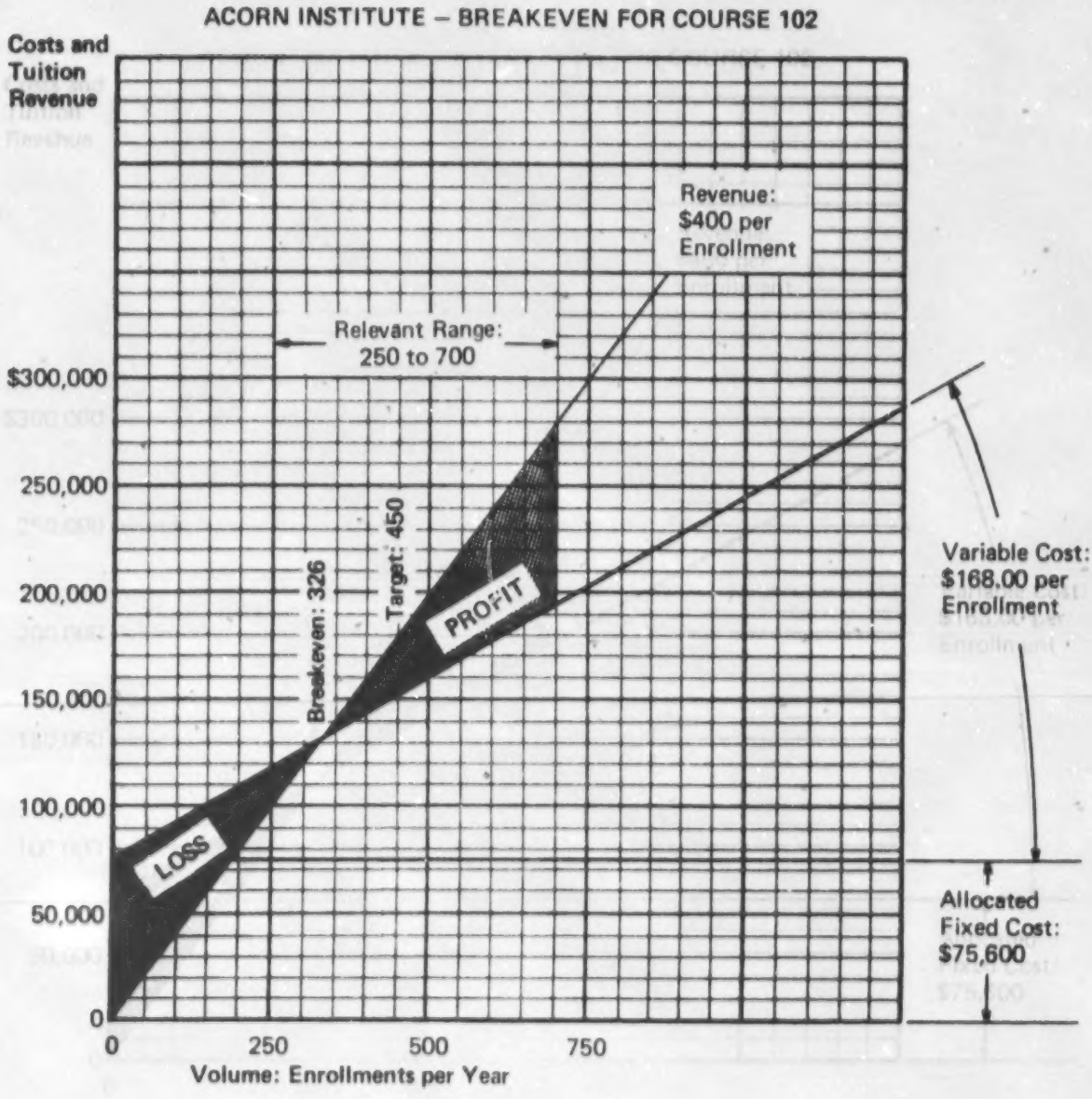


Breakeven Solution by Algebraic Equation:

$$\text{Breakeven (Enrollments)} = \frac{\text{Fixed Expense}}{\text{Unit Revenue} - \text{Unit Variable Cost}}$$

$$\text{Breakeven (Enrollments)} = \frac{\$113{,}400}{\$300 - \$108} = \frac{\$113{,}400}{\$192} = 591 \text{ Enrollments}$$

Proof: $113,400 + ($108 x 591) = $177,228 Cost
$300 x 591 = $177,300 Revenue
(Rounding up to a whole enrollment explains slight difference.)



Breakeven Solution by Algebraic Equation:

$$\text{Breakeven (Enrollments)} = \frac{\text{Fixed Expense}}{\text{Unit Revenue} - \text{Unit Variable Cost}}$$

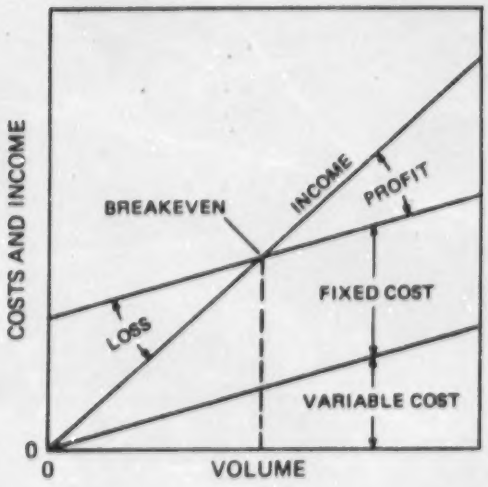
$$\text{Breakeven (Enrollments)} = \frac{\$75{,}600}{\$400 - \$168} = \frac{\$75{,}600}{\$232} = 326 \text{ Enrollments}$$

Proof: Revenue
$\$400 \times 326 = \$130{,}400$

Proof: Cost
$\$75{,}600 + (\$168 \times 326) = \$130{,}368$

Alternative Breakeven Charts. Looking at Acorn's breakeven charts, the fixed costs comprise the foundation of the expense structure, and the wedge of variable cost is the next layer. While that the wedge of variable costs is the next layer, there is perhaps a better way to chart the breakeven point. I prefer this next format because it shows any loss as a bit out of fixed expense, and that's a realistic portrayal of what happens. When a profit center fails to reach breakeven, the contribution falls short of covering the allocated fixed expense. Procedurally, just begin the chart by plotting variable costs from the zero point, then add the fixed costs as a parallel layer of expense.

Your Contribution to Contribution. If a course goes sour, or a new course comes up short of its projections, do you dump it and look for greener fields? Not necessarily. The decision ought to be influenced by its contribution. Assuming the course to be on the bad side of breakeven, how much contribution is generated to defray the school's overhead? Going back to Acorn, the picture has changed. Course 101 is holding steady at 900, while Course 102 fizzled, with only 250 enrollees for the year. Calculate the contribution of Course 102, the total contribution as related to fixed expense and Acorn's profit. Without the contribution from Course 102, would Acorn Institute be in the red?



Calculate the Contributions and School Profits

Acorn Institute Data	Course 101	Course 102	Total
Average Unit Revenue	$ 300.00	$ 400.00	
Variable Cost (per Unit)	108.00	168.00	
Unit Contribution	$ 192.00	$ 232.00	
Yearly Enrollment	900	250	1150
Contribution per Year	$172,800.00	$_____	$_____
Contribution, % of Total	_____%	_____%	
Fixed Expense			$189,000.00
Profit (Contribution Less Fixed Cost)			$_____
Course Revenue per Year	$270,000.00	$100,000.00	$370,000.00
Profit as a Percentage of Total Revenue			_____%

CONCLUSION

From the above discussion we can see that unless you have a firm handle on all costs associated with your courses, you will have a difficult time in analyzing where you are. It is impossible to budget accurately unless you know:

(A) Historical costs;
(B) Actual costs per course; and
(C) Where you want to be financially with your course offerings.

As Directors of Education you will want to work closely with your accounting people from the very beginning of any new course. Financial statements are only "histories;" they tell you where you have been. In order to achieve success, you need much more than a history: you'll need a plan.

Hopefully, this article has touched on some of the tools for financial analysis and planning you should understand as you develop new course offerings.

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